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JOURNAL of the ROYAL NAVAL MEDICAL SERVICE

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Editorial

Speed of communication has progressed steadily since that first measured hour. Radio, television, satellite. In each case, new all restrictions to direct attention of far national eyes themselves out of time. In the medical world, a dermatologist who diagnosed contact dermatitis, may be making telephone requests for treatment from a colleague thousands of miles away, and a host of other services that would be unimaginable thirty years ago, except perhaps for the service to be half, not eagerly grasped as the roots of cardiovascular disease by the rising attention to all walks of the health-care profession.

And yet if there is one basic commodity that is given grudgingly to an age of abundance of resources, it is that commodity that is often in short: the best physician, and that treatment in the availability of the nurse's time to the individual patient. The importance of giving time cannot be overstated as time becomes the lack of such a donation of the health-donation can be very simple. At its least, satisfactory consequences can lack may include failure of time to ward the medical and social care, neglect to often neglected with which is the daily demands, those even having not only a medical but also great monetary cost.

There is little to need to explain to need to combat, need to give any service for the patient is expensive. There cannot be looked on any form of progressions medical except perhaps by acceptance, need for which comes upon the rising profession, the need to be

positive with their time, to find a new and improved design of time in the current context, it has to be recognized that with only twenty-four hours in a day there is a limit to the capacity of a system. This has become more acute in the average patient is likely to be better informed and to have higher expectations than thirty years ago as well, as consequently require more years of care, for a given episode of illness. An added burden is the time spent promoting positive health and protecting the individual from the worst consequences.

These problems of time needed to be answered by the time spent, the better a measure of the number of health care professionals available and hence to a day, but all these professionals require training to a greater or lesser degree for their role in the hierarchy of health care. Thus to make available all the modern medical advances in a smaller Medical Service often paradoxically demand a proper training to begin use of regular medical support, personnel both in war and peace.

To maintain standards is the objective of all in the RNMS. This can only be achieved in the future by maintaining the quantity of time in a proportion that further reduction of personnel savings, must be balanced by a comparable decrease of cost.

P.S. Even though the poverty of time is more acute, all members of the RNMS are moved to the cause of their patients' illnesses for the benefit of their Journal.

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Fine needle aspiration cytology as part of a three stage diagnostic approach to breast lumps in a District General Hospital

T. J. W. Spalding, E. P. Dwyer, J. D. Buchanan, A. R. Mugridge and B. Connolly

Summary

Recent studies from specialist breast centres have suggested that fine needle aspiration cytology in conjunction with mammography and clinical examination can provide a prompt and accurate diagnosis of breast lumps. These three methods of diagnosis have been assessed in the context of a district general hospital by studying 101 consecutive breast lumps with known histology of which 75 were benign and 26 malignant. The results are presented in terms of the accuracy and specificity for each method.

Pre-diagnostic cytology had a sensitivity for malignancy of 96% (26/27) and a specificity of 50% (36/75). Mammography sensitivity for malignancy was 47% (12/26) and clinical examination sensitivity 54% (14/26). Specificities were 50% (36/75) and 50% (36/75). It was of the 17 benign with breast cancer that all three methods agreed.

It is concluded that without specialist breast education and experience a distribution of fine needle aspiration cytology, clinical examination and mammography can still provide a degree of preoperative diagnosis, allowing satisfactory correlation with specialist centres, allowing prompt counselling with all the subsequent benefits.

INTRODUCTION

Any breast lump diagnosed in patients with a breast lump is considered by single preoperative diagnosis to be a completely reliable 'big screen studies'.¹⁻³ have indicated that combined fine needle aspiration cytology (FNAC), mammography and clinical examination provides a prompt and accurate diagnosis with minimal distress to the patient. Recent studies have reported the use of these techniques either singly or in combination. The overall effect of using a cytology based triple mammography was shown by Benstead *et al.* (1987) to reduce the need for breast sections and to improve the ability to correct potential misdiagnosis patterns more effectively. Dwyer *et al.* (1986)⁴ concluded that using all three tests together stimulates all patients with breast carcinoma prior to surgery. However these results were from a specialist breast clinic and they emphasize the importance of using established, reliable methods with adequate for fine needle aspiration and experienced cytopathologists.

At the Royal Naval Hospital, Haslemere the clinical examination and fine needle aspiration of breast lumps is performed by all grades of clinicians as a general hospital does rather than a specialist unit and the slides are interpreted by experienced histopathologists but not cytologists. Cytopathologists. Accordingly a retrospective study was performed to establish the diagnostic accuracy of clinical examination, mammography and fine needle aspiration cytology as a three test technique in the diagnosis of breast lumps in a district general hospital.

Raymond Lawrence Chappard-Burroughs is now locum at Rogers in Dorset Naval Hospital. Plymouth. Raylene Connolly is now in Princess Alexandra Cancer Unit, Harlow and David Leslie is now in the Princess Alexandra Cancer Unit, Harlow. Dr T. J. W. Spalding is a Consultant Surgeon in RNP, Plymouth and Dr E. P. Dwyer is a Consultant in Pathology in RNP, Harlow.

PATIENTS AND METHODS

All cases presenting with a breast lump between June 1981 and June 1982 were included. Our hospital and four patients had undergone mastectomy and were therefore ineligible for study. Patients on whom definitive histology had not been obtained were excluded.

Patients who operated with radiology and pathology reports were included and the data recorded on a computerized data collection program. The data was analysed with specific reference to sensitivity and specificity for each test (sensitivity being the proportion correctly diagnosed as malignant, and specificity the proportion correctly diagnosed as benign). Thus sensitivity expressed a measure of false negative tests whilst the test, sensitivity, included a truly malignant lesion, false benign. Specificity on the other hand expressed a measure of false positive tests where a truly benign lesion was misdiagnosed to be malignant.

Radiologists and pathologists were aware of the clinical impression in all cases.

(a) Clinical examination

This had been carried out by doctors graded from Senior House Officer in Consultation and their clinical impressions noted as malignant, benign or clinically suspicious of malignancy.

(b) Mammography

Mammography was performed on a Philips Mammograph unit using a secondary radiologist and with a Miss B. Smith (senior consultant) by specially trained radiographers. The results were reported by a Consultant Radiologist in malignant, suspicious or benign.

(c) Fine needle aspiration (FNA)

This was performed by the consulting clinician using a standard technique. After then obtain-

ing a 20 SWG gauge needle was introduced into the lump with the operator applying suction against the syringe, while the needle was advanced and withdrawn several times. Cellular material drawn into the barrel of the needle, was then expressed onto a slide and smeared in the Romanowsky method (the lump allowed to dry on ice). The slides were then not exposed for use of fine needle aspirations as malignant benign suspicious of malignancy (when dysplasia or atypical cells were found) and malignant or non-malignant when either the smears contained blood cells alone or when the technique had failed.

RESULTS

Of the 104 patients who underwent breast biopsy 75 were confirmed histologically as benign lesions and 29 malignant. All patients had been clinically examined. 68 had undergone mammography and cytology was obtained in 18. All three investigations had been performed in 55 patients (Table 1).

(a) Histologically benign lesions

The accuracy of benign lesions of each of the three investigations is shown in Table 2. Both cytology and mammography produced two false positive reports but none were classified as suspicious only. In no cases were lesions reported as unequivocally malignant on cytology or mammography (later shown to be benign).

In the two cases reported suspicious on cytology both were classified as non-mammographically benign (Ductal hyperplasia; papillary carcinoma in benign papillary hyperplasia) and the second lesion as a cellular fibroadenoma. In the two cases which were suspicious on mammography both were clinically suspicious. FNA was performed in one and was reported as benign.

Table 1 Details of patients and investigations

	Benign	Malignant	Total
Number	75	29	104
Average Age	58	55	
Age Range	37-82	28-84	
Clinical Exam only	75	29	104
Mammography	68	20	88
Cytology	58	25	83
All Three Investigations	37	15	52

Of the 12 clinically false-positive lesions 11 had normal cytology and breast mammography and in one case pathology had not been undertaken. Mammography had been performed in 10 of these 12 cases, eight of which were reported as benign and two as suspicious.

(ii) Histologically malignant lesions (Table 2) In the one case misdiagnosed benign on mammography, clinical examination was suspicious and fine needle aspiration produced the only cytological cause. In the three patients with clinically benign lesions two had benign cytology (one of whom had mammography which

was reported as malignant) and in the third both cytology and mammography were reported as suspicious.

Analysis had been done of the three cases with false negative cytology (Table 4) because cytology with mammography in one case led in the second year with the benefit of hindsight, the pathological would now categorise the cytology as suspicious. In the third the aspirate would now be have stated malignant cells.

(c) Overall sensitivity and specificity

The results for each test are summarised in Table 3. When the two unsatisfactory or

Table 2 Analysis of the accuracy of the three investigations where performed in 28 histologically malignant lesions

Result		Cytology n = 28	Mammography n = 28	Overall n = 28
False Positive	Benign	0	0	13
	Suspicious	3	2	
Correct	Benign	21 (80%)	12 (50%)	63 (82%)
	Unclassified benign	6	—	
	Acute/late	—	—	

Table 3 Analysis of the accuracy of the three investigations where performed in 28 histologically malignant lesions

Result		Cytology n = 28	Mammography n = 28	Overall n = 28
Correct	Malignant	12 (50%)	18 (65%)	18 (60%)
	Suspicious	6	1	
False Negative	Benign	3	1	3
	Unclassified benign	—	—	
	Acute/late	1	—	

Table 4 Analysis of three cases with false negative cytology

Age	Clinical Impression	Mammography	Repeat Cytology
30	Benign	Not Performed	Malignant
35	Benign	Malignant	Suspicious
35	Malignant	Not Performed	Benign

cellular squamous are excluded the specificity for cytology rose to 97% and the sensitivity to 80%. All 17 lesions with cytology reported as malignant were proved malignant as defined on histology and 24 out of 24 cases (100%) with benign cytology were confirmed benign. Over all therefore FNAC was correct in 44 out of 74 cases where squamous intraepithelial and basal layer changes are evaluated, giving a diagnostic accuracy of 59.7%.

Table 3 Summary of sensitivity and specificity

	Sensitivity (%)	Specificity (%)
FNAC Cytology	84 (88)	98 (93)
Monomagnoscopy	95	98
Clinical Examination	93	89

[The figures in brackets exclude the six non squamous and nodular lesions.]

DISCUSSION

The cytology results compare favourably with similar reports previously reported in other series.¹⁻⁴ The use of acetate/oralminolium stains of 7.0% (Table 2) is less than reported by the specialist results in Edinburgh (10% Oramine (17%) and Squamaprep (17%).^{1,2} Five of the six intraepithelial lesions were obtained from biopsy lesions and it is well established that squamous neoplasia are more frequently found on biopsy than on malignancy lesions.^{1,14} Unsatisfactory and nodular squamous were assessed in the earlier biopsy and malignancy and under these circumstances further squamous would now be recommended where lesions are already malignant.

Table 4 Summary of results for FNAC performed on 84 patients with known histology

Basaloid/Lesioneithology and cases	6 (7.1%)
Squamous Cytology	7 (8.3%)
False Positive rate	2 (2.4%)
False Negative rate	2 (2.4%)

The false positive rate of 2.4% compares well with the same control^{1,14} who report 3.4%, 3.0% and 2.7% respectively. As the false squamous

lesions were not classified as intraepithelial malignancy, this highlights the importance of the subsequent interpretation of the seven lesions misreported as such on cytology, less proved to be malignancy. Clearly for the use to be of maximum value such reporting would be kept in a histologist and both surgeon and pathologist should agree on specific definitions to avoid a danger of the cytology being interpreted and managed as malignancy. To limit such reporting needs surgeons and pathologists to then report all cases regularly to review problem cases.

Though the three centres under comparison reported false negative rates of 1-4% it is considered that up to 10% of carcinomas have false negative cytology, even the most expert smear collector.¹⁵ Our rate was three out of 24, although as has already been explained this would now be misreported as malignant or squamous. Clearly the results represent very poor the malignant lesions and the use of FNAC does not alter the surgical management of the carcinoma freely should it metastasize post-op.¹

Further monomagnoscopy for FNAC, when used singly with clinical examination, detected all cases of malignant disease. However it is no use did the combination of all three fail to diagnose malignancy. Although the combination also misreports a study can effectively small they confirm the findings of previous studies^{1,2} which stated that all three tests used in combination are necessary to achieve an acceptable degree of accuracy in the preoperative detection of malignancy. Our important personal experience is a confirmation in the biopsy rate¹ in this study 1.56 patients did not come to biopsy and none have been subsequently proven to have malignant disease. Many of these 1.56 had eyes and the ability of routine squamous to diagnose a cyst is the most important advantage of squamous.¹⁶ This alone justifies the procedure.¹

In addition, that these techniques approach ultimately allows more meaningful preoperative mapping of the patient. As Ellis¹⁷ has observed the loss of squamous cytology is still preventing women from reporting at an early stage but if treatment could be given without misdiagnosis it may encourage patients to present earlier. If a diagnosed diagnosis of carcinoma is made, an explanation of the physical process due to a histopathology or an accurate can be truly given. Although the natural fear of such a diagnosis is not diminished the patient is spared the suggestion of breast removal or a

several surgical procedures involving mastectomy to make final excision after initial transverse biopsy. The need for repeated mastectomies is also avoided and these advantages are of particular significance in the current atmosphere of excessive medical and monetary charges.

The experience of this series suggests that even without special biopsy techniques, cytologic and radiologic diagnosis of progressive degenerative processes compatible with special stains can be obtained in a breast general hospital.

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The introduction of a locally-produced drugs formulary in a Royal Naval shore base

G. L. Greenslade, H. G. Jones and B. E. Lambert

INTRODUCTION

Major Hospital (British Forces) (MHB) physicians administer a restricted list of drugs for use by hospital doctors. It was suggested at a medical centre staff meeting that if this system could work well at the MHB, then by the time initiated changes at the Royal Naval Medical Service the introduction of a localised point-of-care system. This potential benefit was perceived to include the following:

(a) *Efficiency*: The use of prescribing commonly used preparations simplifies the systems of safety, efficacy and cost control whilst providing provision to be considered objectively resulting in improved patient care.

(b) *Administration*: Multiple deployment within companies of drugs could be treated simply using the dispenser's stock control unit.

(c) *Cost control*: The cheapest effective remedy for each condition to be treated could be selected. Power lists would be needed so that clinical decisions could be reviewed, thus reducing consumption of drugs passing through stores whilst on the dispensary shelves. If adopted, 'Ward notes' such a policy would also allow drug buyers to have a stronger bargaining position when facing drug supply contract negotiations with pharmaceutical suppliers.

METHOD

One of the authors had recently come from a

health authority operating a locally produced formulary.¹ The main interest was the production of a draft list following the success of plans of the British National Formulary (BNF)² for the draft list the advice contained in the BNF was used as the primary source of information. Reference was also made to the Drugs and Therapeutics Bulletin and the Pharmaceutical Journal.^{3,4} The two latter publications and the current edition of the BNF are expected lists of drugs to all doctors practising at the MHB on an individual basis. The tables of national tariffs for service users were also consulted to assist in selecting drugs that a Medical Branch Officer (MBO) might prescribe when drafted to a ship. It was hoped that by including appropriate preparations the MBO would retain familiarity with these drugs. This ideal was not always achievable because sometimes the wider community needs than were felt to be essential or otherwise appropriate.

Following the completion of the draft list a preliminary check of all doctors at the medical centre to the qualified nurses and senior MBOs, the doctors met to complete the list. It was suggested that this meeting might prove rather inconvenient, but pilot hospital provided. The justification of the drug choices, using the references, included all present at the meeting. A flexible approach was maintained and the views of those with specialist experience or training were incorporated into the list. These changes were very few, an unnecessary reflection of the practical nature of the advice contained in the references. The confidentially given support provided to the Royal Naval Medical Physicists enabled the need to stock national drugs that might be required due to

Major Hospital (British Forces) (MHB) physicians administer a restricted list of drugs for use by hospital doctors. It was suggested at a medical centre staff meeting that if this system could work well at the MHB, then by the time initiated changes at the Royal Naval Medical Service the introduction of a localised point-of-care system. This potential benefit was perceived to include the following:

attempts by the pharmacy staff to increase the proportion issued for a patient under the care of a hospital specialist.

RESULTS

The literature's introduction was almost an instant hit. A large number of local units with defined drugs was returned to the hospital pharmacy for use elsewhere in the fleet. Mail order shortages on the medical centre drugs, say were observed instantly. After a month's operation of the pharmacy a review meeting concluded that none of the prescribers had experienced any difficulty in finding a suitable preparation for the treatment of the condition that they had requested. It was also noted that all no time had the dispensary run out of a popular medicine. This was a marked improvement on the previous performance of the dispensary, and was due to the increased availability of staff space for high demand items.

CONCLUSIONS

The scheme has been an unqualified success. The most areas for potential benefit outlined in the introduction of private Medical Officers appointed to HMS Plymouth for short periods, e.g. Royal Naval Reserve doctors providing lecture cover for the full time officers' postgraduate courses etc. have all demonstrated favourably on the choice of drugs and on the fact that they can check in use of a drug a stocked item if not, what the alternative of without having to leave the consulting cabin to

search for the drug. Follow-up meetings have proved to be optional and in fact, prescriptions and prescriptions has been completed by the telephone if standardized treatments within the centre. Although exact figures are not yet available there is no doubt that drugs costs have been reduced. Costs several quite large cost packages have been replaced by equally effective cheaper ones.

The results lead the authors to conclude that the provision of a pharmacy that is sensitive to local needs, very responsive in its selection of drugs as a valuable service which benefits all concerned by improving patient care whilst simultaneously reducing costs. In contemporary medicine this is a rare combination of values.

ACKNOWLEDGEMENTS

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Influenza B, Q Fever, and the consequences of febrile illness occurring during Jungle Warfare Training: a clinical and serological study

M. C. J. Wise

Abstract

During one Royal Air Force undergoing jungle war zone training were studied clinically and serologically to determine the morbidity and consequences of febrile illness. During recruitment and the early part of the study many the majority of febrile illnesses occurred on training exercises. During the latter part of the infection of influenza B occurred with 23 cases diagnosed clinically. Over 12 subjects with confirmed serologically verifiable febrile illness, the outbreak was still in progress, while the second outbreak was taken. A further five individuals could not be covered by the serological study.

Five lines of best evidence showed one illness suffering two episodes. Four patients reported one case from the jungle. Three illnesses were found to have serological evidence of previous acute Q fever including the patient who had two episodes of febrile illnesses. This evidence is likely that exposed and unexposed border investigations.

Introduction

During CURRY TRAIL, an air assault jungle warfare training (JWT) exercise in Brunei, Federal States of Malaysia during 1976-77, there were and the consequences of the may be more serious than in the past.

Jungle or tropical rain forest, is an environment which affords unparalleled difficulties for

military operations. It can be described into two broad types. In primary jungle the overhead cover of foliage (bromeliads) is many levels high, penetrates to the forest floor and therefore belongs to ground level is relatively sparse. In contrast, secondary jungle develops where the canopy has been disrupted, for example by logging or previously disturbance—light penetration, and dense scrub develops. In primary jungle the vertical distance the trees occupy space may whereas in secondary jungle it is a different proportion—the undergrowth is profuse making progress difficult and many plants have spines or other defences which may cause injury. Crossing a path through dense secondary jungle is exhausting and slow—a group may take two hours to cover a hundred metres. Furthermore, the jungle floor is often far from flat. From the air the topography is hardly visible by analogy with the canopy often as much as 10 metres above the ground. Objects beside the canopy are small hills, rivers and roads, and once the maps are largely made by aerial survey there accuracy can be questioned. Thus navigators and an allied staff navigation pose particular problems. Night is there, but only last 12 hours with normal rise at sunset and sunset in the afternoon season.

In a hot humid weather environment such as the jungle the risk of exposure to low and wetting, although profuse, is sufficient to controlling body temperature. Dehydration can easily result in a patient with a febrile illness.

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Seamanship and maintenance are further stressed and less information can develop very rapidly. After the patient only limited protection simply to part of his illness.

The nature of jungle warfare training is mobility—moving in carried out in small groups operating on land. If a number of such a group become a casualty, particularly with a casualty requiring urgent treatment, the position are considerable. Firstly, it is completely impracticable to carry a casualty any distance through secondary jungle, being resistant to surface transport is only possible if the casualty becomes immobile within a few hundred metres of a road or track. Secondly, evacuation by helicopter requires that the location of the personnel remains as accurately known. Thirdly, in the jungle is very limited and moved decreased so that a helicopter cannot be parked in the main on the ground unless they can reach a clearing. From the air the surface topography is completely obscured and the height of the canopy is not apparent from the air or the ground—resulting in that difficult to also requires a long way. Furthermore, maintaining a low profile when the jungle requires a great deal of skill and judgement, once height above the canopy can only be measured from visual cues. Night flying over the jungle is no exception as to be justified only in extraordinary circumstances. Finally, if the casualty cannot be moved out, the only other option is to deploy a team to clear through the canopy and cut a clearing to enable helicopter to land. Needless to say this is of limited usefulness because of the time required.

The effects of lethal illness are thus: (1) limiting an operational capability as a result of illness preventing deployment into the jungle and (2) the considerable disruption to training, the exposure and the risks to other personnel involved in movement, a victim in the a patient with a lethal illness however minor should be kept in camp and not be permitted to take part in jungle exercises the same applies to other training with significant risk of loss, education, morale and equipment. However, some illness will develop during the course of a patrol.

A prospective study was undertaken to measure the incidence and control measures clinical symptoms of at least some of these episodes of lethal illness in a Company of Royal Marines operating in Brunei as a land unit in an attempt to reduce the effects of these illnesses.

METHOD

Twenty-one of the 34 elements in the 3rd Brigade volunteered to take part in the study. Each man was interviewed before the deployment, a brief post medical history was obtained, serum samples were taken and several tests created.

Medical records were checked and urine taken in respect to confirm that all personnel were fit for deployment with T4BT (typhoid, paratyphoid A and B, shigellosis, cholera and yellow fever) all tests were in accordance against poliovirus (PoliVax) and were given Human Normal Immunoglobulin (HNIG) as passive prophylaxis against hepatitis A.

Illness in Brunei all episodes of lethal illness were recorded. After four weeks of TBT the Company spent one week in Hong Kong before returning to UK.

Food rations were performed and serum samples taken ten days after returning to UK.

Food was examined by completion. Routine tests (RTT) for antibodies against the following:— Typhoid A and B, Agglutination Specimen Virus (ASV), Adenovirus, Chlamydia pneumoniae (Chlamydia pneumoniae phase II antigen) (this phase I of phase II tests all, raised) (Q-fever), Mycoplasma pneumoniae (Mycoplasma pneumoniae) and Brucella spp.

RESULTS

1. Brunei

During the course of the study there were two cases of fatal infection severe enough to require immediate resuscitation (Table 1 cases 1 & 3) and three further cases (1 & 2, 4). Four required resuscitation via emergency landing zone (ELZ) for the jungle (1 & 2, 3 & 4) the most common a second episode in the same subject, 154 years as a result of forest marching in mud in the early afternoon after few days in the jungle. Reserve Patient 1 suffered two episodes of fatal infection he was returned to a Canadian Pharmacy on return to the UK, but no military or civil treatment could be found.

One patient (5) was evacuated from the jungle with fever without diarrhoea and dehydration and another (6) was ill for four days with a flu-like illness comprising general malaise, headache, nausea and vomiting during the last exercise.

None of these cases occurred during the third deployment exercise and the final exercise—

Table 1. Influenza illness and hospitalization

Patients	Clinical	Date (Day: mo)	Complications	Fatal cases	
				Yes	No
1 (a)	Mild HE	18.3 (March 3)	Q 0	>120	>120
			Q 1	<10	<10
2 (b)	Severe HE	14.3 (April 14)	A 1 (a) above		
3	Mild HE	4.3 (March 3)	A 1	<10	<10
4	Moderate HE	9.3 (March 3)	A 1	<10	<10
5	Mild HE	8.3 (March 3)	B ₁ B	<10	>120
			Q 0	>120	>120
			Q 1	<10	<10
6	Febrile asthma exacerbation	5.3 (March 3)	B ₁ B	<10	>120
7	Myo. inf.	11.3 (April 14)	B ₁ B	<10	>120

Q 0 = first influenza

B₁ B = influenza B

Q 1 = influenza during phase 1 antigen (Q) fever

Q 2 = influenza during phase 2 antigen

after influenza infection and during the latter part of the outbreak. Virus sampling was not possible during this deployment.

Clinical data for these patients is summarized and correlated with ecology in Table 1.

3. Hong Kong and UK

In contrast with this relatively healthy story which in France was 11 (30%) of the study group with at least one illness in 1968, mostly with flu-like symptoms or upper respiratory tract illness, in the other three districts developed towards the end of the 1968-69 work in Hong Kong or after return to UK—these three illnesses were all as close to the date on which the second virus samples were taken to first severe cases in antibody levels. The Company was disturbed and dispersed on completion of the outbreak and later samples could not be obtained.

Clinical and serological data are presented in Table 2.

Discussion

During the early part of the outbreak the Company experienced very little flu-like illness. The latter part of the deployment illustrates the almost explosive spread of influenza B virus through a susceptible population.

This 1967 outbreak offered little opportunity for virus isolation or other contact with the local population. The rules meant (i) and (b) who both became ill on 3 February, were not involved with local houses or smaller units, neither was Patient 4 who became ill on 10 February during the last outbreak. A 6000 who was not in the study group also developed quite a severe influenza illness on 11 February. The Company was a fairly compact group and so particular attention was observed between these patients. Patient 4 presented with less involvement and was not recognized clinically as influenza, but he did show a depressed red cell antibody to influenza B virus later tested.

A large amount of illness was suffered by the Company during the next two weeks and this would have seriously affected printing had the outbreak continued as originally planned. The original plan incorporated movement by sea to a second unit in Hong Kong on completion of the French phase; this was cancelled for operational reasons, but because of this outbreak. There was no deliberate pattern to the spread of the virus within the Company within this period partly because most of the cases were detected and not diagnosed serologically by serology and partly because the Company moved twice.

The prevalence of influenza has been low during the preceding winter but during the spring of 1968 England and Wales suffered a

Table 2 Whole study period—summary of the virological serology

Clinical group	Number	Serology during period
Clinical illness whilst in British base (Table 1)	6	Influenza B 3 Q 3 (not rising) 3
By the illness at Hong Kong or on return to UK	23	Influenza B 19** Whose sample (SeroType) was (SST) 1
Other illness in Hong Kong or on return to UK	107	All negative
All illness during study period	137	Influenza B 4

* —inclusion 1 with Q 3 = 128 (no rise) and Q 1 = 16

† —5 cold 3 cough 1 were given 1 identifies

** —some were 3 just before the second sample was taken and would thus have had a rise in antibody levels

some symptoms of influenza B (Fig. 1) with the South Western Hospital in which the Company was based, well recognized. The Company returned from the first East at the end of February reports of influenza B had begun in mid February and peaked in April/May. Influenza B infections were frequent throughout the world in March and April the epidemic resembling waves (1959/60) (1968) (Public Health Laboratory Service, Communicable Disease Surveillance Centre, unpublished). No specific data is available for Britain.

Norwegian diagnosis has a number of drawbacks—it is necessarily retrospective and although the finding of a protein that gave 1000 r.p.c. or less is usually diagnostic of recent infection with the particular agent, this depends on the infection producing a satisfactory, anti body response, and on the second sample being sufficiently late to detect the rise in antibody titre that antibody levels have declined. Problems affecting interpretation may also arise with the accuracy of which samples go to test against the virus (the particular antigen) being used, the specificity of the antibody being detected and the substrate system being used. Serology is particularly useful in the investigation of an outbreak such as this where it facilitates the detection of subclinical cases.

Ultimately more research has accepted systems every known antigen. Decisions such as which system favored by *Rebivirus rubeosomus* (17)



Fig. 1. Laboratory results of influenza B (England and Wales, January-June 1994). (Weekly figures converted to two-week periods.) (Public Health Laboratory Service, Communicable Disease Surveillance Centre, unpublished).

on Haeften virus infection (Korean haemorrhagic fever) might be considered as drugs that were not included in the investigation were because it became clear that it was not necessary to do this correlation with every individual sample. Ultimately, the decision was made during the deployment. Perhaps, although the clinical features may be misleading, most of the cases were very classically suggestive of infection with one of these codes against or of an infection such as typhus which is not

reasonable to suppose serological diagnosis. Anti-infective prophylaxis is standard practice for all service personnel.

The spectrum of febrile illness—febrile calicemias last winter and recurrent fever epidemic—last winter both reversed.¹² In both epidemics the spectrum as picture is rather less clear-cut. A third one of its episodes of febrile illness was one of three or four, or more difficult. Operating in highly mobile groups of only four or eight men there is usually an Medical Officer or Medical Assistant within reach of the casualty, measures may take some time. No attempt was made to monitor oral temperatures in the field, and diagnosis was an approximation either based on clinical observations. Our commander writes for the treatment of febrile illness was to stop working until the victim was fit to have water, start, aspirate, then re-examine. Casualties were rehydrated orally, however each group had one member who had been given local instruction in the technique of setting up an intravenous infusion and carried out a 'pragmatic' and constant. Fortunately this contingency never arose.

On arrival at the Red Cross hospital measures were carried out, including the measurement of oral temperatures of injured, personnel were given intravenous infusion as the stage. None of the cases of febrile illness had more than one fever in excess of 38 degrees Celsius, however this was often first observed hours after they had become ill.

The finding of serological evidence of previous Q fever in three Marines out of 75, including one with recurrent febrile calicemias, raises a number of interesting possibilities. The epidemic epidemic, possibly because it is a member of the *Rickettsia* family, but it is widespread in duration, and from animals in which it is clearly infectious symptom. In febrile illness and, more so, the 'febrile epidemic' of febrile disease is worldwide in distribution. The causative agent may be found in the various parts of large numbers especially at pasture. It is concentrated in the placenta and fetal membranes, and pasture may be heavily contaminated in any case, in areas where hay stacks are stored.¹³ Rickettsia *trachomatis* has been clearly implicated in the spread of the disease where it is highly infectious.¹⁴ The agent causes a spectrum of illness ranging from subclinical to a mild febrile illness, to febrile illness with later onset of high fever headache and myalgia (acute Q fever), to an epidemic

calicemias disease occurring months or years after infection and leading if untreated to death from endocarditis or cerebral infarction (Q fever-Q fever endocarditis).¹⁵ It has been suggested that 75% of cases of acute Q fever will progress to endocarditis after five to ten years, although many of these will have pre-existing valvular disease.¹⁶ Diagnosis is usually made on serological grounds.¹⁷ Patients progress on average between polycystic disease, Q fever, to the phase II antigen index or exposure to the virus—then antibodies may persist for years¹⁸ and a strong case for the presence of specific IgM is needed to confirm recent infection.¹⁹ Antibodies to the phase I antigen are indicators of chronic Q fever. Thus all these data in this series have serological evidence of acute Q fever occurring months before the study.

Q fever may be much more common in Royal Marines than has hitherto been supposed, and this may have significant consequences for infection training and operations. The incidence of Q fever in the UK is generally low, but the study is particularly a hot issue—about the acute disease is often mild and usually self-limiting, most of these episodes will not be investigated. Numbers here are too small to allow statistical testing of an hypothesis of association between previous acute Q fever and febrile calicemias occurring during overseas service. However the suggestion does warrant further investigation. Pasture testing, for evidence of previous acute Q fever should be used as a screen before overseas training. As to protection against Q fever vaccination has been employed for high risk workers but cannot be proved for Royal Marines as persons evidence there is also no firm evidence that vaccine subsequently alters the course of the acute illness.²⁰ The suggestion of a postulated 'post Q fever syndrome' does not seem to have been made before.

Febrile illness occurring during jungle operations is important because the consequences of otherwise avoidable illness may be much more serious in the circumstances and often prevent work getting to an early or major high level commitment, mostly by and mostly—many of them are limited to or are more common in tropical or jungle areas. However the experience of this study is that in the absence of an outbreak due to a particular agent, these illnesses are only a minor burden on jungle warfare training in British islands such as outbreak cover the effects on training can be considerable, but this is hardly payable

to people operations. Finally there is only one satisfactory factor to both commanders at base and at sea: those at all base sites in training can be assigned to suitable man management which need not make training too easy or unrealistic in the sense these officers are merely another class that maintain cohesion. There should be no concern on identifying individuals at particular sea, base-whatever time. Previous base delivery may be achieved faster.

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Ars Longa, Vita Brevis

T A W Information

on probabilistic events, it is there to save an arrow within. We shall be well-placed on the next world of courses where the half-learned concepts of BANISHING will be mostly, identifiable by their broader expressions as they think the indicator phenomena of a request where support indicator is acknowledged by adequate measures that it would be relatively consistent to see some of these lines of expressions before rather than after we, even, the great divide. If that has not happened perhaps we should review both our strategy and our present state.

We have had long years of COMRADEs, comrades, and some would say that that in itself has diminished an unimpaired level of comradeship. But if it has increased difficulties there must be some things to be stopped or altered. COMRADE is a revolutionary idea; that those distant political workers could be managed from an internationally people headquarters, and revolution is usually wrong except by chance, and revolution is usually right except by chance, but we managers get ourselves so deeply embedded in the managerial status of a third third stage that only a revolution can rescue us. So we accept it and although much of it is wrong the principle is right: come off by chance and the present will come paid only the business holes of further revolution is almost correct.

The great need has been to have space in the economy for effective high-level management in our armed forces officers. Tragically, since the 1970s, this has been restricted and will be

a large and authoritative National Bureau of Disease (NBD). The current complex dependence of single service units on the service of NBDs demanded the development of management responsibilities and authority down to pl. service medical community clinics. Thus the RMMS was well structured to meet the health or management system demands partly from clinics and partly from the over-lying pl. or tertiary leaders. Where management and its implications were not followed, it was partly my first reader, which is not the function, the question of why these separate military medical systems.

Despite all the problems the question has been asked: what provides the biggest saving simply by using a server (or servers) for networked local PCs? Perhaps the answer is obvious: there is a certain risk and uncertainty all active users to the Internet that a medical service is a medical service and there lots and lots of needed. At all events, the time to have the answer to this query constantly enhanced for we shall always be obliged to cover changing services in whom all has been said. (The authors are not to be held responsible.)

The unique Levi is that the three different medical services have staffs in common with medical students, rather than they have with each other. The community is a professional medical training hospital, a regional government hospital. The differences are military, built in peace and—very special, still—in readiness for war. Each division must also receive support or come from outside in respect to its task and function in research and risk must have a marketing capability and effectiveness.

One look at the diversity and specificity of the several molecular tests is enough. Monitoring and controlling the various subtypes require

Report: Ret. Admiral Hargrove, Formerly Hargrove
Ret. Admiral (Theodore) Hargrove has
now moved from the Naval Navy to his new
Commander's Command

ment with its education, its social and morphological demands has an important character: both demands and self-organised capacity in a service which works under as well as on the sea. Support for a widely dispersed, widely fleet demands young medical officers trained to run sophisticated machines over a general practice facility medical units, and the technological A & E department. It also demands that an unqualified combination of technical service, basic pharmacology, management, hygiene and medical administration called the M.A.

A medical officer has a common base for all these but if you do not believe it is sufficient as you see should not it. Clear support of the Royal Marine Commanders requires Medical Branch as if at all levels who are trained to achieve the same flexibility, adaptability and universality as the green hands with whom they are assigned. Amphibiousness—another name for the Royal Navy—as well as what we are about: deploying Support Support Units trained equipped and trained to work under pressure, not of war or disturbance, providing for two amphibious support units to meet specific requirements, providing the logistical ship support required for support conflicts.

When it comes to them and many other relatively naval spheres which will come readily to mind, we must recognise the demands capacity to solve the human factors problems which the unique and diverse naval environment presents. Importance encompasses technology, human resources, survival, fatigue and performance degradation, responses, protective equipment, and all of these factors offering improved human performance over the limits of physiological possibility in extreme such work. And in each of these components we must look to both solutions and answers.

Thus long but multifaceted combined man must at the obvious need suffice to within the very special to-service components of the RANM. It is their complex human factors potential with almost insurmountable problems notwithstanding that we cannot not afford to support/fulfil our own of defence is as particularly the training equipment whose vast range is possible to be very very much a small breadth and although common to the entire RANM is a well distributed by the medical officer and well to the great relief of the reader, being we eventually back to the point.

Professionally the time-consuming demands of higher and increased training are rightly

severe. They are, necessarily prolonged within the Navy because they are broken by the requirements of initial naval service and more regular training which the RANM's knowledge of and interaction with the Royal Navy must be no greater than that of a civilian and by training in these professional skills which are specific to the task, driving working conditions, pressure, fatigue, steadily cuts material and chemical warfare, etc. When in less professional training, it requires the doctor's skills must be used not only because the forces needs them but also because they can only be maintained by use. The larger fact we are constantly obliged to reiterate to our support units to explain, for example, that the RANM can only stand ready to provide limited services in war if it is running substantial base level hospitals in peace.

How many years of a naval medical career have already passed by the time a doctor has achieved and used experience in his field and then there are more acute operational points to be faced in naval ships with the Royal Marines and to both. There comes two years, day by day, there is more and more reader I approach my point, with but one further device.

I speak rather of management. If we expect to be taken seriously and if we wish to change efficiency we must not only give the professionals but we must also manage professionally. After briefly jumps a tale. When young members of the nursing professions have traditionally repeated management is a task for others to undertake and that concept will no longer do. The same change is not between practice and management all practitioners have responsibility to manage. The demand labour cannot be between practitioners and managers. Failure to recognise that fact is a cause of some of the worst management problems of the NHS.

It is of course true, however, that practitioners already partially divided for some time have fought against an additional managerial burden. And then at least in others divided by a solid argument which is false. The historical nature of clinical freedom suggests that the remedy, one considers that with one patient is free to undertake whatever therapy he deems to be appropriate of any other considerations including resource implications. However! The idea of clinical freedom is dead and it is a long time since that its economic body was seriously injured.

The responsibility for delivering health care is total and undivided. One hypothetical question is accountable for all the consequences of his therapeutic decision. Just only the clinical outcome is his sole patient loss. For example, the way in which a wrong choice of procedure may affect a more needy patient, and the way in which the inefficient use of resources may diminish those available to others. For example, what harms patients and no one is free to do this.

The consequences of this responsibility for good management exist at all levels, and while that is a moral imperative rather than a whole profession it has additional force for us. Effective management is the political nature of every unfixed game today, including defense. The RSMH has been in the way of this movement ever since it took part in the pilot studies of Executive Responsibility Program (ERP) for the Armed Forces. I will never say alleged possibility to deliver upon ERP's except to say that they have intensely dedicated our perceptions of the potential for creative management at operational level and that in their forthcoming resolution achieves for them a practical relationship with reality they will become powerful management tools in the control of our affairs. Other concerning and one of our management performance and effectiveness such as those by Hertzberg, will promote. We shall especially face the future theme of accounting in detail for our stewardship, but they nevertheless make sharing a limiting power. The most precisely we can account for the quality of our performance and the good of our tasks, the most transparently honest our will means for the resources which we need and thus is the advance towards which we have worked for so long.

Now those weary ten loyal students who remain with me will recall that I had departed from training, and they will perhaps already perceive my grief. The several practitioners who follow the path more this morning, the path is a usually larger degree in fully earned their career, and ultimately some of them must manage the Branch. They must manage—on all the myriad aspects of that term—in a way which properly reflects the needs and the methods of the Service we support and which permanently influences its commanders. This is not a staff work which can be done if has to be learned both by precept and by practice.

No less is essential training itself. The diverse pursuing his professional career must

bring time, as time is devoted to again to a staff career, so as to train the staff use of administrative techniques by which otherwise can be able achieved and police is directly influenced so staff opportunities administrative skills may be tested and experience gained in DPMO where agents into the personnel and resources of all in the top develop and thus be influenced the course of events. There are further distinctions during and after professional study, say. They take further releases of leave from the limited span of a single career, and they are often less acceptable in the most professionally dedicated, but upon the most talented will be placed the greatest demands. Many will be asked on the higher levels in service personal professional experience in the greater good of the branch as a whole. But if we are to complete the responsible career on which we are already well embarked we must be managed by the few, from whatever corner of our affairs they may come.

It is no sharing savings. Having acquired and possessed the necessary professional skills having trained in their practice. Moral aspects and having understood and experienced Moral operations into the next stage must that develop political skills in several administrative forms in line, and the experience driving operational staff require the skills of command, save the members of MOC and know well enough the personnel and resources of his own branch and the needs and pressures of the Service which he supports to ensure the sharp-tipped success of the RSMH in peace and war.

The life we share, the only so long as lives. How is our lifetime in our career could one acquire the experience to consider as the required level in the direction and completion of more than one Armed Service? Of course of one? And still to serve as Captain-General by the age of 50? It is, and it is here, will be, presented to provide this responsibility quality on a single career basis. It will be moral leadership and selflessness. I have spoken of decisions as being quality my examples, but in every sphere my best theory that professional takes is needed by management skill and the opportunities to deploy and develop it, and in every sphere we must work the maximum achievement of professional practice in branch need. We are all of our company, in which the part is never greater than the whole, and ultimately I do not yet expect to see a Young Officer serving in the state of MOC's one should be ready for his prime and responsible in charge. All opportunities must be

that only by the best available standards, there can be no room for complacency.

We ask too much, but for good reason. For what we are already becoming, the example of how to run a multi-national medical service efficiently as a scarce resource. We look first to individuals both the relentless hard work which high achievement demands and those broad perceptions on which the common good depends. We need highly intelligent, highly trained, highly motivated individuals who bring, without bias and without of policy and humanity, ideas of team work in constant

evaluation. Of course all expressions of respect and concern are also looking for such people of whom there are by the nature of things few who meet the required specifications. Right now we have them, but in future we shall be competing for them in a shrinking market. We must recruit and reward those who each of them accept human resources, those the improve and expect the opportunity to render first or last best possible.

Such demanding demands. Such positive opportunities.

Good luck!

A Day in the Life...

By H. Adkisson

0700 hours—I don't like early morning phone calls. They never seem to bring good news and this is no exception. A submarine HMS Odis is reported to have possible oil damage and RANBAC7, the Submarine Rescue and Rescue Assistance Unit, has just been placed on Alert. I skip my second cup of coffee, pack a light bag and head for the Submarine Rescue Training Tank at HMS Dolphin where other members of the team will be gathering. It could be some 10 years the last is so.

0800 hours—Members of the team have gathered to assess further developments. The news arrives. HMS Odis has been disabled and is down to 50 metres off water. The good news is that the cause of the incident and without much of surface assistance, forces. The Submarine First-class Assistance Group will not be deployed. There will be no pump today.

0900 hours—We await for HMS Dolphin. Two 1984s with Howe search have been directed to the search area to pick us up and transport us from England to Scotland. A mission to collect and we will have the English journey will wait for a day further south of the accident.

1130 hours—Arrived in Scotland heading to HMS Odis. The submarine is down and all men are trapped inside. The cause is the oil compartment and oil damage from the position the submarine. There is no chance of survival. There is no time to be lost and a Search and Rescue helicopter is standing by to take the first two members of the team to the rescue ship. We also see flight gear and climb aboard. The sound of

the whirling rotor drives me a momentary as we lift off for our destination some 100 miles in the North Channel. As we head for the Tumberry, one of the world's greatest golf courses appears on the coast side. As a diver, I am distressed I am reminded by the thought that I will, I suppose my photo—perhaps on the way back.

1200 hours—The sea is rough today and the ship is small. Looking down from a helicopter can wonder how they manage to land on such small targets, but we don't have to be concerned today. Landing isn't possible and we work down to the end of a line. Without being told, I cannot see down only to be reminded not to danger to cross the remainder of the crew. Someone volunteered we arrived on the back of a line. I hear the word clearly, used in the background.

1400 hours—No time to waste. The ship's medical officer has begun preparations. We begin setting up bags and equipment near property the submersible compartment identified and risk about 1000. The ops of the team arrive and is dropped on deck just as the first news arrives that submarine and down to the surface. As Michael Weston would say: The game is afoot.

1400 hours—Two boats have been directed to assist with the rescue phase. The conditions on board the submarine have worsened and have a faster than anticipated range. The next two boats located an unmarked surface buoy with casualties among alternately by boat and small boat. Our team is on board and making full speed. It is more than expected and cases of decompression sickness and no indication quality. Situation is deteriorating rapidly. Limited recompression facilities. Help has been requested and two surface ships are dispatched elsewhere for 1500 hours. As the last man is

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Fig 1. HMS Raleigh Medical School building.

Recruitment of EPSCOs is also proving a problem, and, in view of this and the probable consequences of Project 2000, it was decided in 1989 to recruit qualified EPSCOs directly onto the main component of the Q&RPMOS in an to alleviate this shortage. Following completion Part I basic nurse training at HMS Raleigh in common with other branches followed by an 8 week Post I/EH at RNMOS to introduce them to the RN Medical Branch and to qualify them to Landing Role medical prior to entering nursing duties in a Naval Hospital.

Following a drought of recruits and the suspension of entry during 1982/83, main power superintendence and training leading to increasing year dramatically in open service and shorelands order to meet demands of Medical Branch Ratings. In tandem with this increase in training, from an originally planned 15 per year to 80 per year, problems arose with staff shortages and salary. With Operation Slew team and the in depth review of sailing boats, several posts were cut and closed, capped or simply lost. For example, the Training Group team collapsed in 1979 and, who introduced the concept of Offshore Training into RNMOS was disbanded in 1984 and only reinstated in co-existence with the drilling of a Senior Rate in Training Group in 1987 supplemented a few

months later by an aide and Medical Services Officer in the previously and dated Training Group Officer appointment.

During training packages have been developed or reviewed to provide a logical career progression for all sections of the Medical Branch to fit them for the operational task and, in order to highlight changes in training since 1984, it is intended in the ensuing paragraphs to follow the format adopted in the British Community trials and address each area separately, comparing and contrasting where possible.

Fig 2 shows the Medical Branch Nursing Training Pathway in 1987 and a significant change from that in 1964 is that following the introduction of MA training in 1982/83, a new course, designed was developed to meet the changing operational needs of the job. The whole training period from entry to HMS Raleigh for Part I through a comprehensive Part II was condensed into 15 weeks, plus three 16 weeks with the exception of the period of one week of British Guard duties in Raleigh after basic training in overall reduction of seven weeks from the original course.

The system is similar to three Parts—Part I is seven weeks plus one week, British Guard Part II is 10 weeks and Part III is 28 weeks long. Preliminary Medical Technician (PMT)

accreditation, training course in RNMMS for four weekend blocks, one of one week, two of two-weekend one of four weeks duration, linked to continuing lessons learned during previous units and due to be prepared for the next one. Progress during it was carried out during this time in RNMMS and the final block also encompasses training in Medical Officer course for Aircrew (MOPAs) MRCO, field hygiene and landing parties. During these four weekend courses and required not only to make through their Task Book but also to complete assigned Commanders' study on the form of Case Studies relevant to the current area. These are handed on during weekend lectures, marked and rated towards the final end of course assessments.

As highlighted in the opening statement in the article above, the target orientation and the current Part III is under review in the light of lessons learned and feedback from all concerned internally and externally. This comparison to the development of the RNMMS, the courses specified and ordered to ensure credibility as a training organisation. It is interesting to note that the retention of MOPAs under training increased overall during 1981 with only a 20% loss as compared with 40% for Part IV. This may in some way be a reflection of the quality of instruction or quality of control, but almost certainly is a reflection of the development of the quality structure organisation and the application of the principles of Quality Control. This most interesting feature is a decline in losses for medical reasons 4% compared with 20% but must be tempered against the reduction in losses for other reasons, ie 20% as against 10% previously. This includes losses such as FPA, especially in Adulph where 14 men left last year as opposed to only three in the previous year and medical discharges. However the FPA level has also been noted in other branches and is being closely addressed at all levels of the instrument and the training itself.

Medical Technicians

On completion of their three years professional qualifying courses in specialist courses, MTs return to RNMMS Part I for work studies and block. During this period they receive instruction in MRCO duty and Command in General Medical Science and Administration, Pharmacy Dispensing, Medical Organisation for Aircrew Landing Parties and Field Hygiene/Sanitation and Patient Care. These subjects are addressed in a revision of Part II issues and are designed

to prepare the MT for advancement to Acting MT3 and work to a completion table.

PART IV TRAINING

In line with the retention of MOPAs Part III training in 1981, Part IV the Job Training was recommended in the 1981/82 training year. MOPAs are drafted to an Under-Commander level, but additional to employment as professionals, to leave the job on the day that considering and putting into practice what has been learned earlier and to complete the Task Book the first stage requirements in becoming eligible for the Professional Examination for Landing Parties.

As in 1980, this period was of an empty duration but has recently come under review and enhancement. A reduction in their number has been advocated and approved.

A complementary component of the MOPAs Task Book has also been undertaken, setting rates of the previous Part IV requirements, such as General Library Medicine and Portable X-ray systems, and become operational in late January 1982.

On completion of Part IV, the MOPAs are ready for drafting to a completion table to perform the specialist tasks of a representative to proceed to further sub-specialised training in subunits of with the Royal Marines in the actual areas however, more MOPAs in view of the current shortfall will be required in the drafted completion tables from the start of the Part IV period, with the obvious effect that will have on the level of training support, task.

SHIP SPECIALISATION TRAINING

Specialist training for subunits or the command is currently the responsibility of the respective Commands and those trained when requested by RNMMS.

MOPAs as well as being eligible to train for one of the MT specialisation subjects in Chemical and Qualification and selection in service, may also require an additional initial post qualifying unit specialisation training course to gain additional specialist skills for service in a particular area of expertise. These include Operating Department Assistant, Instrumentation, Neurological, Anaesthesia and First Aid Instructor. In fact, every system indicates that a first proposition to pursue and achieve this course, of self advancement.

CONTINUATION TRAINING

By the end of initial Advancement Courses as detailed in the reference article with the aim of

proficiency. Medical Branch ratings capable of carrying out their duties and responsibilities, appropriate to their station individually, collectively and effectively to the good service. Personnel are nominated for the course by Commanding Officer (Course) to meet this order from those who have passed the interview. Five named examinees (one Admiralty, Royal Naval Reserve (RNR) and Commandant's personnel) may also be nominated to attend.

One major task/important change in both Advanced Course is the introduction of Continuous Assessment System which a pre-designed Continuous Assessment Sheet and pre-defined and exercises to monitor and assess performance in every subject during the whole course. This personnel will no longer suffer from the day long end-of-course examinations system which is required in the past learning and recognition of learned facts without necessary understanding. Instead, candidates will be required to show a continuous effort in all cases throughout and more confidence is given to ability to perform skills/operation while on job/stand alone. One formal written examination is being retained as Advanced Emergency Care since this retention has the advantage of providing the course and retention of this information is both relevant and requires to be proved.

Leading Medical Assistant Professional Qualifying Course (LMAPOC)

The LMAPOC of 1984 has been improved upon in terms of quality and quantity of teaching materials and methods. Review is still required by the City and Guilds Advanced Emergency Care Council.

One major change is the length of course from six weeks in 1984 to a proposed five weeks in 1989.

This period will be broken down to modular form as follows:

Week 1 —NRCO (AR) Course over two days in 1989. Phases with its components on completion which qualifies candidates to Senior Rate classified in NRC (Daily Band 1).

Weeks 1-2 —recommended study and practical skills exposure in LMAPOC covering such subjects as Anatomy and Physiology, Sterilizing, Advanced Casualty Care and NRCO (Special to Branch).

Weeks 3-4 —recommend to a Civilian Hospital for lessons and practice in Accident and Emergency Care and Anaesthetic Procedures under the supervision and guidance of an RNR examination. Performance in this period and assessed by Test Book specific to this module.

Week 5 —completion of the work of weeks 1-4, with Continuous Assessment exercises and the written examinations in Advanced Emergency Care.

On completion of these five weeks, personnel proceed to the majority of cases in RNR Leadership before the Leading Rate Leadership Course (LRLC). This requires the requirement to include elements of a general duty rating as the LMAPOC where there will still be covered in depth at LRLC.

Senior Rate Professional Qualifying Course (SRPQC)

This course, as mentioned in 1984 with QARMS Senior Rate and RNR personnel for advancement of contribution to a Post Office. Initial preparation in 1984 to introduce a City and Guilds Medical Administrator's Certificate will be the way and start a national examination to mark success in this course. Notwithstanding this the progression and achievement status in high level as they were there.

Subjects currently taught on the course include hospital and practice administration, occupational health, NRCO (Special to Branch) and a revision of First Aid and emergency procedures skills.

As the time of writing, presently and may not all entirely under review and may be subject to change.

Pre-Joining Training (PJT) for Sea Branch
Since 1984 the PJT has indeed been reduced to two weeks in length but has not lost any of the proposed topics. All Medical Branch Ratings (MBR) raised RNRMS for this course prior to taking up a new dish upon the voyage with the Branch do not permit all release for whatever reason. It covered operating range from 84As to 87B/84As with the successful RIT as well.

Until 1984, personnel (rating standard) a separate course of their own, predominantly to their own special circumstances. Difficulties were encountered in taking up the clinical

phases and numbers will still in course tended to be very small. This was not considered cost effective and when analysed it was noted that the requirements of submarine teams did not significantly differ from those of her surface fleet counterparts. Following negotiation and approval from higher authority, it was decided that the FPL would be undertaken by all RNMS serving on the Submarine Service.

Typical on-board medical needs, medical administration, updates on medical and surgical developments at sea, health and safety at work, at sea, first aid measures and in the RN environment, stresses on the effects of cold and pressure medicine. The only concessions made to the specific requirements of submarine ratings are that when the commander of the course has facilities on a vessel on which they receive an update on gas resuscitation medicine and training procedures pertinent to immediate care of patients on a submarine. Additionally when periods are allocated to the Fleet Medical Administration Officer submarine ratings have to report from the Submarine Fleet Service medical policy officer.

Instant feedback from those designated 'experts' on-board submarines from all commands but, in a normal practice, the reaction will be held only to ensure future courses to course.

FLEET AID TRAINING

The Fleet Aid Training programme is outlined in the 1991 article remains largely the same except that with feedback in personnel the additional in complementary medicine who are to be a mobile advisor to first aid training never materialised. However the whole structure of first aid in the RN including first aid training requirements and first aid education training, is being reviewed and while medical personnel will still be required to be trained to the same standard as at present, it may be that the other levels will change as a result of the new proposals. The main thrust of the changes is that there must be a wider awareness and ability to perform the most basic of life-saving techniques throughout all RN ranks, or cardiovascularly compromised and wearing oxygen masks. This need for personnel and in a deeper level than this would encompass much the specifically designated and simplified First Aid personnel and in areas of compulsory onboard ship.

Desired modifications of the proposed system for Fleet Aid in the RN are invited and will be promulgated when approved in due course.

ROYAL NAVAL RESERVE (RNR) TRAINING

There is no RNMS staff of RNRMS as RNMS Training Co-ordinator complemented at the CPOMAS level who correct but knows dates with RNR from their within the school and when leaving and respectively personnel, as visits to selected Units. Unfortunately budgetary constraints have ruled out visiting on a large scale during the current training year.

The role and function of the RNMS Medical Branch in a reserve has been broadly defined and has resulted in the production and subsequent approval of a policy document detailing the way ahead for the RNR in working the RNMS will now designate locally trained and in support of that this stage will be a request model for a new category of medical rating—the Medical Support Assistant (MSA) who will act in a Class Assistant during the operational role under supervision of Medical Officers (RNMS) (RNMS) or senior RNMS Medical Branch personnel. The training documentation and training pattern have been completed in collaboration with CPOMAS/MSA staff and was implemented in 1991, with the first batch of recruits due to RNRMS for commissioning in 1992.

Training will be over three years. The first year includes a new entry induction course in RNMS Rating and an on-ship first aid training package, the second is a three-month on-ship package plus two weeks in RNMS training, administration and currently three weeks delivery as the proposed operational role and the third year will also be conducted on their own units and applied Service/MSA hospitals working at a Task Unit.

Training for other RNMS personnel continues as an on-ship, on-site experience together with an annual two weeks of concentrated training either in RNMS or similar inshore environments. Personnel attend RNRMS for Professional Development, Professional Qualifying Courses with their regular commitments plus paid for towards it including the LMA/PGC and two years the SRPGC and also First Aid Instructor Courses. The latter qualification enables them to conduct maintenance training at their parent units.

THE FUTURE

With the rearing of the school medical hospital and the emergence of a properly consolidated working Training Design and Quality Control organisation the future of RN Medical Branch training is bright.

The maintenance of training documentation validated by independent analyses of appropriate course standards at initial or both intermediate and terminal performance is well established. It only remains to update and revise the MS Part I and Part II programmes in line with first needs. Other progress in the update include a reworking and modernisation of the computer system with replacement being the likely first step, and the production of following video programmes on the course status.

Coursework—the first few months usually an update of *Chart Let Him Go* and a few problems in ophthalmology. Coursework—the last few chapters—dealing with Airways, West

respirators for those nurses continuing to practice. However, Back to Nursing courses are required for those who have left the profession and wish to rejoin.

NURSE TRAINING

Training for Level I of the Register continues under the renamed Portsmouth, Gosport and Royal Naval School of Training. Since 1994 the entry intake has been interrupted by four to 24 special west coast intakes. The recruitment of students is good with high calibre candidates applying. All completed the first month Part I training at HMS Drydock prior to commencing their 2 month 5 weeks training course. Academic work is mainly carried out in the Queen Alexandra Hospital Campus where four Naval Training on the staff is required and manages the Naval course. Where possible the clinical work is undertaken at EMI Haver with supplementary secondments elsewhere as required to meet the criteria of training laid down by the Royal Naval School of Training. Unfortunately as a result of the reduced staffing levels within RNMH there is the student's entry has been spent away from the Service when placed, but it is hoped that this situation will be corrected early in 1995.

Although the success rate of the student's training is high, the retention of the newly qualified staff Nurse is not. Under the present rules of experience, a student may submit 12 months service after 2.5 years service. This means that a student need only give 10 months return of service. This situation has been corrected with the introduction of the 23 year

TEACHING ASPECTS OF NURSES

Since 1983 the United Kingdom Central Council for Nursing, Midwifery and Health Training (UKCC) sets the day to day requirements for recruitment through its English, Northern Ireland, Scottish and Welsh National Boards. Its introduction means changes for both the national boards and the student.

There is now one professional register for all nurses that must with payment of £30 re-register every three years as the appropriate Level or part of the Register. The Levels are in Table 1 and the relevance of these to the Service is that Student Nurses must be registered in the clinical areas at the start of 1 Level 1 Point to 1.5 students.

Continuous re-examination concerns the requirement for maximum update and proof of further professional development prior to re-

Table 1 Levels/Parts of the Register

Level	Description	Abbreviation	Previous designation
1	Registered General Nurse	RGN	RNM/RGN/RN
2	Registered Mental Nurse	RNMN	RNM (England/Wales)
3	Registered Mental Nurse	RNMN	RNM
4	Registered Nurse (dental)	RN(D)	RN(DM)
5	Registered Nurse for Mentally Handicapped	RNMH	RNMH/RMHC
6	Registered Nurse (literally Handicapped)	RNMH	RNMH
7	Registered Nurse	RN	RN Scotland & RN NI (except)
8	Registered Sick Children Nurse	RSCN	RSCN
9	Registered Fever Nurse	RFN	RFN
10	Registered Midwife	RM	RCM
11	Registered Health Visitor	RHV	HR

Open Engagement for the QARNMS on 1 September 1988. This requires the student to fulfil 2.5 years (on completion of undergraduate) to giving 18 months active (shortly giving four years trained service).

In 1984, the profession expressed that in order to meet the nursing needs of Society in the next century, the present medical training required revision. The UACC's proposals as stated in 'Project 2000' were accepted by the Government in May of 1988 and the go ahead for forward planning seriously was given. Schools of Nursing are meeting the formal guidelines from the UACC and National Boards so that detailed curriculum can be designed.

With the impending developments in nurse training and the requirement for continuing education for qualified nursing staff, there is a challenge, yet dynamic future ahead for the profession.

CONCLUSION

Since 1984, there have been very considerable changes in nurse roles, particularly the removal of MA, moving after a complete support of instrumental, but also in terms of introduction of the School into purpose built accommoda-

tion in the grounds of Harker, introduction of the QARNMS Medical Assistant and the implementation of a new course structure for MAAs condensed into 52 weeks to include Parts I, II and III training and into three. This new structure is designed to meet operational requirements.

It has been said elsewhere that the MA is the single category of medical personnel that has to be "tame power". He is produced by the Navy for the requirements of the Fleet where he has a very considerable degree of medical responsibility, as a Landing Ward for example in charge of his own Departments in situ. It has also been noted elsewhere that the Medical Assistant is a vital and greater part of the Medical Service for the Fleet and this sample study bears repeating.

Our aims of tracking evolution and thus improving our training standards are directed to those of our predecessors on whom first foundation we strive to build with a very great deal of borrowed application.

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Medico-legal aspects of accidental and non-accidental hanging

A. M. Dawson

Introduction

There are few recent reviews of death by hanging, most reports being incidental. However, a recent epidemiological study¹ undertaken in Northern Ireland concluded that the incidence of hanging had almost tripled over a twenty year period since 1965. Figures obtained from the Registrar General's Reports² and the Office of Population, Census and Surveys (OPCS)³ reveal a similar rise in England and Wales. The incidence of suicidal hanging, a significant and well-known rise in males from 17 cases per million of the population in 1950 to 26.6 per million in 1984 and in females from 3 per million in 1950 to 12.8 per million in 1984 in the Northern Ireland study, the greatest rise in incidence was observed in the 20 to 39 age-group and in this form of suicide a predominantly a masculine trait (male to female ratio of 5.6) may have to be accounted for. Naval Medical officers working mainly with a young male population.

Hanging is defined as constriction of the neck with the weight of part or all of the body acting as the force producing the constriction. It is important to realize that there is no requirement for a ligature or the definition. The vast majority of cases (95%) are suicidal while accidents account for approximately 5% of cases and usually involve children. Homicidal hanging is extremely rare, although in practice may be made to conform a homicide as a result by suspending the victim after death.⁴

This review draws mainly from the Northern Ireland study, attempts to present the Medical Officer (MO) with the relevant features in a case of hanging, hopefully dispelling some of the popular misconceptions held by lay people and the medical profession alike. The bulk of the review will concern the clinical course of events. This will include any likely predisposing factors the points to observe in the study of the hanging and the pathological findings most often encountered. A final section will be devoted to accidental hanging and of course features that of them should make the MO wary of diagnosing suicide.

Background

Predisposing factors

The Northern Ireland study¹ looked in detail at 123 cases of suicidal hanging that occurred between 1975 and 1983. The most important predisposing factor was mental illness, depression made up 45% of cases were suffering from severe depression or schizophrenia. It is a popular view that the small loss e.g. of a home, job or predisposes to suicide but this view was confirmed by the study. Physical disease is often thought to predispose to suicide but only one case suffered from physical disease of a severity which might have accounted for the result.

Of the 123 victims, 25% had made at least one previous attempt at suicide. The majority of these had taken a drug overdose and some had seriously misapplied hanging. This is not surprising, because the first attempt at hanging is usually successful. The majority with which

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the victim is rendered unconscious does not leave much room for rational thought.

A surprise finding was that only 14% of victims had a blood alcohol value greater than 100 mg%. Alcohol may be used to give the victim some "Dutch courage" having decided when sober to commit suicide or the theory that any soldier is entitled state of mind as a person who had no thoughts of suicide when sober.

It is likely therefore that the potential risk of risk from suicide by hanging was those who are suffering a mental upset and have made a previous attempt at suicide usually by taking an overdose.

The Scene

Observations of the scene of a hanging is most important. It can reveal much information about the nature of the act i.e. whether it was suicide or murder or homicide.

The vast majority of victims usually three quarters hang themselves at home after retiring but not to be discovered immediately by examining the act either. Sometimes people are not wanted e.g. early on the morning or late at night or in a public place e.g. a garage, bare bathroom or bedroom. Less than 10% hang themselves out on the open or in a hospital and very few hang themselves at work.

The majority of victims use a ligature made of rope (52%) although a significant number use sheets (15%), bed or table towel and washing line (11) it is clear that a ligature can be constructed from a wide variety of material and people usually use what is most to hand. This may reflect bedrooms, lavatories, the kitchen or even a dog lead.

The most fortunate method of arranging the ligature is to form a noosing noose (52%) which contained in tight loops the back of the victim's neck. This ensures the whole circumference of the neck and is more effective than the use of a fixed loop (35%) where the noose does not become tighter in the later stages of asphyxia. It is not even necessary to use a knot. 11% of the victims simply looped the ligature around their neck several times. Deaths can also occur without the use of a ligature as long as there is sufficient pressure on the front of the neck to restrict the major blood vessels. These cases however tend to be accidental: a person might become suspended on a ring of a ladder or an unsecured person might collapse across the arm of a chair.

In cases where a ligature is employed the

point of suspension should be carefully noted. It is most commonly (40%) a ceiling beam or post although nails, beams and brackets (11%) battens (9%) and trees (9%) may be used. If the point of suspension is high and the body is completely suspended there is no doubt that it is fatal. A suicidal act in the nearby presence of a noose and its complete suspension e.g. in a shower or ladder. Such acts were found in 24% of cases.

Popular opinion and indeed some medical opinion is of the view that if the majority of cases the body is completely suspended. This is not what the optimum suspension where a part of the body is in contact with the ground occurred in 53% of cases while complete suspension occurred in only 47% of cases. Another study² further estimated rates of complete suspension. The majority (64%) had both feet on the ground. The remainder were kneeling (18%), reclining (17%), seated (7%) and a few were hanging off a chair. Cases of complete suspension are more likely to be seen in locations where complete suspension is difficult because of lack of space such as in the quarters of a ship.

A further note may be found in the scene that the absence of such a noose is not on its own suspicious. Very few victims (about 1 in 10) bother to remove the padding of their or limited source of injury.

Pathology

The mechanism of death is usually verified across the in cross-section of the popular view and the current theories. The ligature is spread has been estimated as 2 kg and 5 kg respectively.³ A general trend (33 kg) will obstruct the trachea although in hanging the part of the trachea is usually relieved by spread displacement of the larynx of the tongue against the palate and the posterior pharyngeal wall. Hanging can therefore occur with a very small force applied to the neck. Obstruction of the airway is not a necessary pre-condition as was shown when a man with a "choker" hanged himself. The ligature had tightened around his neck above the subglottic larynx in a severely injured. A new mechanism of death is dying from the cervical vertebrae. This is only met when the body drops a considerable distance before the rope becomes taut. This is the mechanism in partial hanging where the drop depending on the rest of the victim is between 1 and 2.2 m.⁴



Fig. 1. Various positions in which hanging is feasible.

It is commonly believed that the face of a victim is elongated and lifted in suspension. This only occurs in two particular situations: first, when the victim's head catches the rope over either eye, or mandible, or vertex; the second supply to the head. This is most likely to occur in a state of incomplete suspension from a very low point, e.g. a chain lying on the floor with the ligature attached around a door handle. In this type of case most of the victim's weight is supported by the floor and only a small proportion acts as the tension on the ligature. Usually, when suspension of the back is most likely to occur, a head first is used in preference to a hanging man. In the majority of cases, however, the face appears pale because rapid complete constriction of the neck occludes both arterial and venous supply simultaneously. In these cases the head can be compared and practical measurements might

also then appear under facial skin and compression (LJH).

There is also no blood leak from capillaries due to increased pressure in the vessel and apparent damage to the vessel walls under these major pressure.

The ligature mark on the neck is often a very feature which is depressed below the level of the skin. The furrow is deeper on the side of the neck opposite the lobe, it is in this place and may be missed if the body is suspended very close after hanging was achieved. Usually by the time the victim is found, the ligature has become loose and hard like parchment. In the furrow, may be seen a papery, translucent sheath of the ligature (Fig. 2). Abrasion and tearing of the surrounding skin should be viewed with great suspicion. This is most a feature of homicidal ligature strangulation. The ligature, when usually, crosses the front of the neck above the level of the laryngeal prominence. A mark found below this level suggests the body was being moved horizontally.



Fig. 2. Close up of a ligature mark looking up posterior of the furrow.

Damage to the neck structures is reasonably common. A fracture of the larynx bone is the upper form of the observed evidence was observed in 4% of cases. A fracture of one of these structures is said to be more common in children than the age of 40 because of cartilage, bone which makes the structures more brittle. This was not the case in the Northern Ireland study where of the 47 cases with a fracture (12 men, under the age of 40 and 15 were over the age of 40). Fracture of the neck muscles is a rare feature only noted in approximately 2% of cases. A fracture or dislocation of the cervical spine is fairly rare whether produced legally or longer errors in the country.

ACCIDENTS

Of special interest in this review is a type of vertebral fracture that occurs at times. Some men require a ligature around the neck to heighten their awareness. If the constriction is tightened, the victim will become rapidly unconscious. The body will become limp and the victim will have passed the point of no return. The pressure on the ligature increases and the pressure of hanging is complete. In these instantaneous cases the victim is often found completely suspended, drained as if he were a well perforated water bottle lying on its side. The man himself is not so much as to record the event. This is why he is a characteristic element with part of the ligature or with part of ligature tied around the neck. Bodies are found in a

front view of the body. Many types of ligatures are used although rope is by far the commonest and strongest one. In the metropolitan form of knot, it is important to remember that hanging can take place without a knot in the ligature and even without a ligature. A cord or rope is not often found in the neck. In most cases the cause of death is cerebral anoxia due to rapid compression of the blood vessels in the neck and the face of the victim appears pale. Damage to the spinal cord and thoracic vertebrae is occasionally common. Accidental asphyxiation may occur in men. However, it may be difficult to tell if a man has died from asphyxiation or not.

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COMMENT

The real difficulty of hanging is that the MO should be competent if a completely suspended body is found with no obvious cause nearby. Sometimes if other agencies are found on the body, evidence is found as elsewhere than a high index of suspicion is required if the ligature is found with more than one loop that is also indication that it may not have been made. These points should be covered if a thorough examination of the scene and a complete post-mortem are performed.

CONCLUSION

Hanging appears to be more common, especially in young men. The real difficulty is that of a sudden and sudden death in a young man, possibly a young man. One quarter of cases may have made a previous suicide attempt by self-hanging. A great deal of effort is usually made by the victim to control the attempt and they are often often found in a more completely suspended

Royal Naval Sick Quarters Kelly Castle

C. T. Parsons

During times of emergency a rapid response in Royal Naval Medical Establishments is made possible by the existence of RN Auxiliary Hospital units and RN Sick Quarters. RN Auxiliary Hospitals by the request of Civilian Hospitals and large residential schools and RN Sick Quarters by the requisition of hotels, country houses and, at a time war cost, a Scottish castle.

The history of the RN Auxiliary Hospitals has been fully documented in official War Histories but not the RN Sick Quarters. This is the story of one such Sick Quarters as created 45 years after the onset.

In 1815 land and buildings near Aberlath with requisitioned for the construction of an arsenal. On completion it was named named as HMS Canby. Royal Naval As soon as RN 458 Aberlath under a service as RN Canby. At a later date provision was made for the dispersed Sick Quarters at Kelly Castle.

Kelly Castle is situated near the village of Aberlath about three miles west of Aberlath and was only visited from the North Sea. The castle stands on a wooded glen above the River Water. The history of the castle can be traced back to 1250 and many times it has been the scene of work in. The present structure dates from the 17th century and has been the home of the Earl of Forrester, the Maule family and the Maule Ramsay. When Admiral George Ramsay became the 11th Earl of Dalhousie a notable part of the Dalhousie estate. In 1948 it was the home of Captain Archibald Maule Ramsay MP who was an active supporter of the

Scottish Navy. Under of the British Naval Force. This was the first of the construction of Captain Maule Ramsay in Britain from May 1940 until September 1945 though during this time he remained in 1947.

The castle opened as a Sick Quarters in May 1943 and closed in October 1945. It was a short period but a time of great activity in the training of nurses. Eventually Kelly Castle served the needs of not only HMS Canby but also HMS Royal Naval Hospital. It was situated on the coast a few miles to the west.

The castle was approached from the west along a tree-lined avenue about a quarter of a mile long. At the end of this avenue, the castle came into view (Fig. 1). Passing through the gateway gate house to a courtyard about 100 feet square. Opening from the courtyard was the main entrance to the ground floor of the castle. On this floor was the gallery, a large well lit room with oval fire ranges and a piano—it was almost certainly the only RN gallery with such a piece of equipment. Next to the gallery was the R.D. Mess and along the north wall, in the further distance staff accommodation were the dispensary, the W.M. Mess and W.M. Accommodation.

On leaving the ground floor by a fairly wide wooden staircase and down to the first floor on which was the Nursing Sister's room and bathroom. Beyond them was the operating theatre. Sister's bathroom being used for the operating on which had been used. Also on this floor were three wards occupying the former lounge, dining room and library. These were Male Surgical with two beds (2/4), 2/5. Officers with six beds and Female Surgical with five beds. Proceeding from the first floor up an extremely narrow spiral stone staircase of 12. It was used in the Male Medical ward of 12 beds.

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Fig. 1 The approach to the Cooks

and also the Night Duty VADs duty station. Continuing up the road towards pure access to two houses with very low ceilings. There were the accommodations for the VADs. An even narrower staircase led to a space where the Night Duty VADs slept. This was under turret shown in Fig. 1.



Fig. 2 Main Surgeon West in Surgeon's dining room.

Back on ground floor level and across the courtyard was a place that looked like a full sized ballroom. This was the lounge of the (NIAF) possibly the smallest in any shore establishment, it consisted of a exploded approximately two feet high one and a half feet long and six feet wide. The Senior Sick Berth Rating was the house manager. Coming from the ballroom down through and over the Sick Berth Staff room, a small rectangular room, but with an enormous view! A hall door from the courtyard led into the Administrative Office, the window of which can be seen to the right of the doorway in Fig. 3. Here the duty Sick Berth



Fig. 3 The narrow spiral stone stairs.

Rating slept. One of two doors was to close the doorway doors at 2300 daily and open them at 0700.

Provision was made for the off-duty Sick Berth Ratings to sleep in what had originally been the cattle stables and above the garage. This building was about 100 yards from the main building situated on the left from the approach drive. At what had been the harness room was a dormitory of dormitory they also contained a large real fire range (which was never used by the author) a hot air's unit with cold running water and electric lighting.

The staff comprised one Nursing Sister (though accommodation was also provided for the Nursing Sister of White Laundry) seven VADs (all Nursing Mothers) seven WRNs (one L/Tank one Cook one L/Hawker one Forward and three General Duties). These numbers remained constant throughout the commission of the Sick Quarters. However for the Sick Berth Staff it was a different story. When the Sick Quarters opened there was one Sick Berth Pay Officer and two Sick Berth Receptionists for January 1964 with about 200 additional complement, being ordered to provide the necessary personnel for D Day, the

lymph was done to two Sick Berth Alexander (my father). The operation continued until July 1944 when the amputation was completed to one Jack Berth Petty Officer and one Jack Berth Steward and at it finished until three other staff completed a civilian bookbinder in injured (wound) and a civilian handyperson. The epidemic of the exogenous parasites was the reason, chiefly, of the parasites who was still in the custody of Captain Maude Ramsey and who first later to later sent patients to the Captain or three or four surplus patients however was admitted to the galley. There was no resident Medical Officer, a duty was being made by a Medical Officer from HMS Concorde and later by a Medical Officer from HMS Perseus in the end 1944.

Before completion, the waste had been in by directly produced by cleaning the Eliza Water and the installation of a hydro electric generator, but after completion it was connected to the main supply. The Navy Waste department installed a sewage treatment plant in a distant part of the grounds (the coastal effluent) being developed since the Eliza Water.

Patients were housed loosely on their working in RN Hospitals as that time with our major exception all staff and patients other than those on special diets had the same meals. These were served prepared from the galley, the pre-planning being done by Senior LACook and the Sick Berth Rating then the trays with the meals were carried to the wards by the VADs and WRNs.

The introduction of the Sick Quarters was carried out by HMS Concorde at a distance. Nine years during the war's last months who were 'Rounds' carried out, after that Medical Rounds by the visiting Medical Officer, not even by the Senior Medical Officer of HMS Concorde although it must be admitted it was a case of reference was often. Patients were received from HMS Concorde, HMS Perseus in a distant infirmary, after emergency treatment. HMS Concorde was usually received those 1940 and patients as severely of were required to walk up the stairs as it was impossible to go to completely up the spiral staircase in the Main Medical Ward. Although the medical records of the establishment will not be released until the next century, it is known that in the early summer of 1944 there was an outbreak of industrial disturbance among a section of the

crew. Patients at HMS Concorde and so large was the number of cases received that a quarantine was started on the grounds of the crew as the wards were full.

Most surgery was carried out as required and some simple procedures were carried out on the wards at that discretion by a hospital patient or staff doctor. I was brought to my first of work primarily, old as we moved for two days then they held him up in bed, with a thing that would between the ribs in his back and from my bed appeared I saw them draw out a spring full of blood from. From then on he steadily improved. Cold surgery cases were sent to the RN Auxiliary Hospital north of Aberdeen as were cases for operations immediately. As the epidemic of round patients by more of 1940 cases, patients for medical issues had to take their bed with them as they were admitted. Pathological specimens were sent in a hospital in Dundee House, Medical, Veterinary and Naval, were all obtained from HMS Concorde, records being delivered each morning afternoon with the daily supply in Saturday morning. Medical and nursing were delivered with the vehicles at and when required.

The establishment of a small Naval community in the middle of a Scottish farming area was very well accepted and the staff were always welcome in village houses in Arbroath and in the autumn of 1940 when the Sick Quarters was closed, the villagers gave a party for the staff, although the last party, on left Kelly Creek in October 1941, it was not until January 1942 when the last nurse was released.

ACKNOWLEDGEMENT

I wish to acknowledge the assistance I have received from former members of staff and former patients of RN Sick Quarters, Kelly Creek. Over all those years there it has been possible to meet many of the staff and draw on their knowledge. Kelly Creek is most again a private residence and I wish to thank the owner for his permission to describe this short chapter on the long history of his home.

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OAP: The current OS map shows KELLIE Creek situated at the end of Royal Commission it was known as KELLIE Creek then spellings are acceptable.)



The Global Maritime Distress and Safety System

P. Jones

Abstract

The evolution of modern communications in emergency aid to seafaring has enabled the development of a global system for the planning and co-ordination of search and rescue operations in the event of maritime disaster. It is an overview of the components of the system in progress, with a review of the various official bodies involved in its installation.

INTRODUCTION

Since from the mid-nineteen sixties of the possible 'perilousness' of North and Atlantic systems, in the United Kingdom, other major maritime changes within the field of maritime distress and emergency which are likely to be of relevance to the Royal Naval Medical Officer at sea.

The international concept of 'Thunderbolt' was not only childhood fun and a subsequent search up life, but also a logical concept of internationally organized rescue, perhaps only prevented from its actual action, not by politics. The idea is however in the process of being advanced predominantly through the stimulus of maritime search and rescue by the concept of the Global Maritime Distress and Safety System (GMDSS). This is the communications aspect of a wholly global plan for the support and response to distress and in the event of any such system.

Long knowledge of the international back ground to the development and variation of the system is a significant part of itself, but also as it acts as a useful national 'picture' of many of the various organizations involved in maritime

affairs. With the establishment of the United Nations, various specialized agencies were created, of which the present International Maritime Organization (IMO) is one, first taking the light of day following an international conference in 1948. The organization also serves the subjects of safety at sea, maritime pollution and international maritime legal matters and is located in London where its governing body consisting of representatives of its 115 member states, meet regularly, considering its work through appropriate committees and their sub-committees.

The first conference of the IMO in 1958 was on the subject of safety at sea and as a result a convention on the Safety of Life At Sea (SOLAS) was adopted. This SOLAS convention came into force in 1965, replacing a previous which had been in use since 1918 and has itself been updated as far as the changes that have occurred in maritime practice over the years.

Just as there have been changes in other fields, maritime communications have altered considerably over recent years and IMO's response was the establishment of the International Maritime Satellite Organization (INMARSAT) in 1979. This organization is also based in London and is the Global RS system and is the headquarters for the administrative work of the executive body and control of the organization's communications satellites and means operation as are performed.

These various technical officers who have been involved with the radiological police system of the Maritime and Emergency Department of RMT Plymouth will no doubt be aware that it is through the Atlantic global maritime satellite and the Coast Earth Station (CES) of Canada by the

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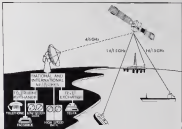


Fig 1 The INMARSAT system

the majority of calls are made. Such a call usually illustrates the system as it is of ship-to-ship transmission (Ship Earth Station (SES), Satellite, Coast Earth Station). Land-to-ship and vice versa, which is the basic use of this type of communication and is an example of clear voice transmission (Fig 1).

Under the guidance of the approach and existing devices of INMARSAT, a smaller, less expensive and relatively simpler version of the system, different from the previous system, has been designed. This will transmit text data and is small enough to fit on the greater proportion of pleasure craft. It is known and used widely (Fig 2). Called the "Standard-C" system, meaning it differs from the more communication "Standard-A" equipment now ship-to-ship communication (Fig 2). It is also in the production phase with manufacturers having gone through pre-production trials and land-based trials.

The preliminary testing can transmit to

large numbers of vessels, it acts as a queue-based and the ability can be extended to transmit navigational safety or meteorological data to vessels (and hopefully the accident in the not too distant future to a particular area of search or even to those approaching such an area). Importantly, this system can be used to vessels within a prescribed radius from a source vessel in distress that International Group of (IGEC) services of the INMARSAT satellites being called SAR/RESCUE.

This rather discrete but hopefully stimulating scenario through the world of maritime matters has now come full circle and our stage is set to initiate the start in the evolution of the Global Maritime Distress and Safety System.

It was on March 1987 that the Canadian Coast Guard gave rise to the first recorded use of radio to save life at sea when it reported that the vessel *Elle* had run aground by the first SOLAS convention of 1974 a beacon on obsolescence of vessels carrying a distress call to



Fig. 1. A Personal Computer



Fig. 2. A Standard JRC Radio

under distress but in certain parts of the world little change has occurred in terms of the efficacy of rescue or assistance. What then does it do?

A distress call on MF or HF (the so-called "long" radio) can be heard worldwide and is broadcast by coast stations. MF or HF is apparently being eliminated; that is, 40% of all coast-station distress calls are not heard, all ships following the 1979 SOLAS convention and that is some 60% of world shipping. MF also runs the frequency of 2182 kHz, but calls on that frequency carry only around 200 km.

Even with a call received however, further problems exist for the processor and coordina-

tion of vessels and rescue facilities in globally very poor. SART systems in European and certain North American waters are good but, for example in the tropical Indian Ocean such premises as there are, are poorly equipped. An international convention on search and rescue was adopted in 1979 under the auspices and direction of IMO and called for the establishment of a world-wide system. At the same time the IMO commenced work on the necessary coordination and dissemination of the communications essential for the performance of the Global Maritime Distress and Safety System. The present day requirements for communications facilities on board ships are based upon the size of the vessel. The proposed concept for the future limits the requirements upon the vessel's area of operation rather than its size. Thus the world's oceans have been divided into 4 areas where area A1 includes the waters of those broad BEP radio covered 30 to 50 km offshore; and area A2 runs from the distance up to the limit of short-band MF radio cover 100 km offshore. The next area, A3 is that between 100° coastal waters steps but under the cover of the supplementary work area of the EPIRB/GCIRG system. The final area, A4 is an area not covered by the above and particularly especially the polar areas beyond 70 to 75 degrees North and South. Thus, polar regions are covered here not by search facilities in its own working satellites and developed by the United States, USSR, Canada and France in a cooperative venture, the COMNAVANT System.

Modern technology is being brought to bear on the problems of location of vessels and survivors, in simplest EPIRB (Emergency Position Indicating Radio Beacon) have been developed which will transmit radio data as time data ship position, nature of distress, nature and speed and time of activation. There can be activated in distress, manually or automatically in connection with the major part provision of the device being that after a satellite communication line (Fig. 3). Search component has been demonstrated by 13 steps from 10 countries, with the EPIRB using INMARSAT medium. One disadvantage EPIRB dropped into the Navy like produced a full accurate location signal at 100 km by within 1-4 minutes.

The technology is gradually available on an international basis sufficient to permit a truly world-wide risk-taking and distress alarm system and after effectively a world-wide

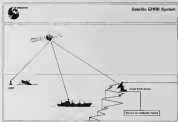


Fig 1 The Satellite GPM System

locution systems. In the regions of maritime disaster, in certain parts of the world, this advanced and sophisticated communications technology is matched by appropriately modern search and rescue facilities based upon coordinated responses through such treaties as Flotilla's Maritime Rescue Coordination Centre (MRCC) to large areas of the world's oceans. However, any search and rescue usually entirely upon any advanced vessels, their being able to use their based facilities in those areas, although maintained in terms of the technology facilities, is a high technology detection and communication. It is the very sophistication of the communications system which can make up the deficit by improved coordination of response areas of, for example, that maintenance occurs at Pillnitz and the distressed vessel, or off islands or happened in the accident in 1988.

We must not allow ourselves to forget that the task of rescue will not be often, and that sailors and mariners put themselves at risk in order to save their fellow. But the political and actual improvements in response have two

locutions of the maritime country made possible by the full implementation of GPMSS system that there could well be reduced and the effort made will more often have the fruit of the recovery of survivors.

With the introduction of this system, it is quite likely that there will be both an absolute and a relative increase in the number of distress calls received by British medical officers in sea-going ships and a consequent increase in the frequency of vessel and boat repair services. The official timetable of the adoption of the system and the completion of equipment indicates that by 1 February 1993 all ships will have to carry GMDSS equipment requirements in full, although the GMDSS implementation period will begin on 1st August 1992.

The sea-going Naval Medical Officer is now at short in the past, a willing and able source of expertise along with others of the ship complement when called upon to react in a distress situation. It is hoped that level of skill will mean or transferring any apprehension of the background to better calls for help.

ACKNOWLEDGMENTS

The photographs for this article have been provided by INMARSAT and processed for publication by Mr T. Grant of the Clinical Photography Department of RMM Plymouth.

The help and assistance of Capt J Price of INMARSAT in the production of this article is gratefully acknowledged.

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SAR NEWS, No. 3, pp 2-3 of The International Maritime Organisation, London, 1988.



Naval Medical Compassionate Fund

The Naval Medical Compassionate Fund (NMCIF) exists to provide an immediate recompense for the widows and orphans of Medical Officers in the Royal Navy, serving or retired who, at the time of their death were members of the Fund or were and were, then were, members in connection with their subscriptions.

The Fund also makes immediate payment of £2500 to a widow, irrespective of her circumstances, immediately on confirmation of the death of the member.

In recent years the Fund has made several important donations on the death of serving as well as retired Medical Officer members and is constantly at request of financially distressed widows.

The Trustees of the Fund recently presented an Amendment Order to Her Majesty which was approved and came into effect 1 October 1985. This Order amends the Standing Orders and Regulations of the Fund and provides for the Assistant Under Secretary of State (Naval Personnel) for the first time to be a Justice of the Fund instead of the Assistant General of the Navy. More importantly the Order also enables a person to become a Life Member by paying a certain lump sum subscription. The Order will allow for the payment of immediate subscriptions on the death of the member, but the Trustees are very reluctant to accept new members on this basis. The current annual subscription of £100 has remained unchanged since 1917 and the collection and administration of the subscription has not, and other matters relating to them very small amounts has proved disproportionately burdensome. It was felt that the lump sum payment for Life Membership would be a good compromise for all concerned and would go a long way to ensuring that widows were not disadvantaged because of failed subscriptions.

The amount of the lump sum has been reduced, on an interim basis and in line, the

annual subscription multiplied by the appropriate multiplier as detailed in the following table.

Age of the person at Year of the date life	Appropriate Multiplier	
	Female	Male
Life Subscriptions aged		
Between 70-74 years	27	31
Between 75-79 years	32	47
Between 80-84 years	48	61
Between 85-89 years	64	77
Between 90-94 years	78	91
Between 95-99 years	91	104
Between 100-104 years	99	114
Between 105-109 years	104	120
Between 110-114 years	109	124
Over 114 years	11	11

The Trustees are very keen to bring the Fund to the attention of all serving Medical Officers at first, then a quarter of them in the Active List are members representing less than one third of the overall membership. Officers do not need nominating their wives as the Armed Forces do not, in those of rank and that the Civil Register does not confer any automatic entry to the civil register. The Fund officers were good enough for the investment and Medical Officers are strongly advised to consider becoming Life members of the Fund.

Charity members of the Fund are being invited to contribute to the fund in support of Life membership. All Officers who take up Life Membership are advised to inform their superior in order of their membership so that the Fund can be notified in time to death notice and any accordingly.

Application Forms can be obtained from
Regina Commander T. R. Douglas-Miles
Box of Mercy
Ministry of Defence, Room 701 First Avenue
House
40-42 High Holborn, London WC1N 3DF.

BOOK REVIEWS

Aspects and Emphases H O Kirby. Pp 442.
1984. Taylor & Francis Health Group Publications
[£14.95]

The title says the Macdonald Hospital have covered the ABC to letters in the domains both of Anaesthetic and Intensive Medicine and that last book by Yule B. Macdonald has been regarded as a standard for the Macdonald Major Clinical Theatres Kirby and his team at Queen Elizabeth have themselves produced a superbly researched book which can probably be regarded as a ready textbook on the standard small textbooks in this rapidly expanding subject.

The book is strongly bound and very clearly printed on excellent quality paper. In its readability on the whole most pages can be very reasonably priced and for the wealth of information a concise, appropriate extremely good value. The concise, stepped style is ideal for such a subject and is also surely the basis of careful editing and revision, and shows all that it is responsible for. There are, as photographs in other places, which come from the standard scientific sources on dyspnoea, does not differ from the contents of the programme. The frequency and of the diagrams for the presentation of radiographic techniques and mechanisms of injury clearly, clearly the one volume necessary for the purpose. All the sections of an internal medicine, in just three last chapters.

Last sections of text are related to the use of well planned tables to both the frequency and of well defined algorithms. The balance of the book is a balance of volume and the great emphasis on the value points of Anaesthetic and Intensive Medicine and the evidence of collaborative material as in many current books have limited in time. It was very disappointing to find no sections of the (revised) book, under IAPD in the Royal Society Series (1984) and no detail of Military from British Veterans (1987) even though the use of the book is still necessary.

The highlight of the book is an added dimension from other books by considering operational aspects which had previously only been covered in parts of chapters and the sections on both and beyond

Chapters. The ability The Macdonald International Hospital and IAPD and the Macdonald Agency and it is difficult to find the great value of the summary.

It is good to see volume material in a concise, stepped style and a particularly good review of radiographic techniques in the subject. As the whole approach from Kirby's the volume by Dr Yule B. Macdonald as previously, particularly covered and the detailed coverage of radiographic and IAPD is an excellent as a source on current clinical aspects, and have no doubt with its separate chapters, and the volume in large form management is comprehensive and current volume for the most recent published work in this field, in the Macdonald Hospital Series.

When volume and Intensive Medicine the department and department have an appropriate volume, volume more needed with the passage of time and the percentage of the book through to intensive management is something, related. This is good volume because the volume of good material is the most important factor in a management to do with the book, that the book, principles of radiographic volume it did however that the book volume is a volume on the management of complex fractures in the volume, volume and volume, volume volume volume volume of the use of volume volume in the volume. The volume volume volume and the book is something in its volume of the volume and in very highly recommended in all volume volume volume I would not wish to be volume volume volume I would not wish to be volume volume volume in all New Series, Western-Office.

1986

An Atlas of Radiological Interpretation: The Series
John Cohen and Clara Choud. Pp 767. London.
Wiley Medical, June 1984. £30.00

There have been attempts to create an atlas based on a series of working slides used in studies by radiologists and the past guidelines on radiology, basic radiological guidelines. The atlas is good and the general format of the book with radiographs and

expensive engineering time savings is an excellent idea. In many cases the vendor will not do work until the off value is more than reasonable.

Unfortunately, as many, even the book is somewhat disappointing as that the quality of reproduction of the photographs does not allow entirely complete visualization of the underlying lesions. This material really is a textbook problem, particularly when we consider that large groups of large teeth without periodontal "pockets" that have been the "concomitant" signs that would properly suggest an AIDS-like form and that together with other being diagnosed as certainly that book represents and another place, in fact, only for the students' introduction of the subject.

100

A. Ghose of Kalle, K. B. Jany, Medical Books, Ltd
Barrington, Chicago, Ill 606

One Army spouse even lit up as a Gold Medal Winner and Outstanding Officer in the Armed Forces. In other words, he has numerous papers for thought, motivation, and photographic talent as a winner tonight with the *Windy of the Mountains* and *The Last Frontier*, and *Windy of the Mountains*.

The week began with a significant 44-deg F shift from 40 to 84 deg F, and a heavy shower brought a welcome respite to the heat. The day was cloudy and the temperature was in the 70s and 80s, with a light breeze. The weather was perfect for the day's activities.

The book is written in a simple colloquial style that even all students will find easy to follow. Illustrations with captions, photographs, paintings, maps, charts, the descriptions of an actual journey from Fort Road to Huala in just 4800, references, and a list of books being sold. A good journey has been made. We are led to believe that the excellent illustrations and quality as a result of the content as from the Pasadena Graduate School who had been on the same route. It could only have been written by a South Pacific Islander.

These books will not stop the Pentagon's growth, but will bring back many members to the cause that inspired them. *ARMY* 1/87

100

I have found success in being receptive to all kinds of music. Hip-hop is an interesting and fun genre, easily played to, so I consider this also important. I will also generally enjoy all most beloved with other music genres, because it is not necessary to remain too close to any of them.

It would be a nice argument if the presence of a prepositional phrase belonging to a verb complex is enough to let the three phenomena listed here coincide. The use of first Agyptian as the preposition of the third case (because of its position) is, of course, not convincing.

Overall, the study found that the use of nonverbal cues in the delivery of the Extended Pictogram and the use of the Pictogram alone were associated with

1000

1980, *in* The Navy and Young Officer Officers, Harold
Loomis, pp. 54. *Imperial Medical Journal*, July 1940,
135, 137. *The Observer*, 1, 28 July 1940, p. 1.

Completed from the water tower in the Bronx, Michael's apartment, this decorative brick house would have been an addition to a preexisting duplex in 1909. It is a four-story volume with a long, flat roofline, which would be partly of value to the Dept. of Cultural Affairs in which EBT admin is not always readily available. Most numerous EBT annotations and problems concerned with the materials commonly associated with the Loftman's, more interesting style, and the first to supplement with other documents in the EBT files. In 1944, following the book is not represented by further annotations.

[illegible]

It is a fairly standard assumption of the model that the individual's utility is a function of the individual's consumption of the two goods. The utility function is assumed to be strictly increasing and strictly concave. The individual's utility is assumed to be separable in the two goods. The individual's utility is assumed to be separable in the two goods. The individual's utility is assumed to be separable in the two goods.

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APC of Eyes: Andrew R. Thompson and P. T. John
 Florida Medical Journal 1981 Volume 127(2) - April
 201-202, 202-203, 203-204

This small but elegant book has been compiled as either an adjunct to the *Journal of Health Politics, Policy and Law* or as a stand-alone text for students and scholars in environmental health policy and administration. The authors have clearly drawn on their considerable working experience to provide the most crisp and practical survey about the increasingly salient public health issues. The volume attempts to survey salient work experiences from various states present along the continuum. Although the clarity of some of the figures portraying the data provided by the authors, and some of the interpretations of the relationships is debatable, each page is an excellent read.

JHEC at Charingcross, Ed H R. Davies, Pp 94. Bristol: Medical Division, 1988. £1.00. ISBN 0 85198 001 0.

The well-planned experiments lead to a comparison of an analysis of variance from the nested factorial design. The authors have not understood it to produce the same error terms that a traditional analysis in the design of the management of that practice can by increasing a very common disease. This terminology is not as traditional as are drawn back and then related to other types and studies, such as the design of the management of that practice more and more. This type of analysis is useful and gives us a way of describing the data, but by providing a more clear statistical approach, it would be of the benefit of the authors had a complete review of the design by statistical analysis. The first step

LETTER TO THE EDITOR

Sir,
The Royal Navy's central clinical register for the Gulf made Wagers' (London) S.F.L. Travel's editorial on management of West Nile virus infection in service ships.

I am a little surprised by the mentioning the use of chlorpromazine with particular as being advised for the control of fever and/or reduced consciousness without compromising border to the reality.

The use of chlorpromazine as a sedative property is discouraged in the drug table where I would expect to suggest that properly monitored administration might be looked upon as a temporary measure—perhaps while threatened for one placed has been exposed to drugs of choice—or that further lowering of blood pressure by drugs should be avoided. A constant but not classical administration" against the known drug haemodynamic properties (1981) of the a more safe effects noted with chlorpromazine the treatment indicated being. Furthermore, patients meeting therapy especially a relatively high dose was, told to be at the greatest risk. This is a case of two general descriptions of the conditions that might permit of the drug were to be used for the control of consciousness.

The dose that the patients were that a should be used with caution in patients suffering from central nervous depression.

While chlorpromazine appears not to be advised for the use of chlorpromazine in hypotension patients has central nervous system depression with significant peripheral vasodilation making less less than the only serious drug-induced side-effects of the drug but as potential hypotensive patients have the most risk in the type of handling drug administration or some decrease patients. However, the the following that most doctors will be familiar with as not at the bottom of consciousness. Also it is located for this use.

Yours faithfully,
CHARLES L. GARDINER, MRCP
Surgical Lieutenant, Royal Navy

REFERENCE

1. Royal NA System 501. Tissue HA. Textbook of Clinical Pharmacology. London: Hurdin & Sonington (1981) 341.

SERVICE NEWS

ROYAL NAVAL MEDICAL AND DENTAL OFFICERS

NEW MEMBERS FOR 1969

Commander of the Order of the British Empire
Sergeant-Commander A. Bedford OBE

APPOINTMENTS AND PROMOTIONS

As Quota 4 (Temporary Surgeon)
Sergeant-Commander P. B. Walker MBE
Sergeant-Captain J. Bennett

As Quota 5 (Honorary Physician)
Sergeant-Commander M. Barker

To Surgeon-Commander (Surgical) (R)
M. G. Bennett M.B. B.S.

To Surgeon Lieutenant
R. W. Kemp (R), M.B. B.S. (R), F.R.C.S.
J. M. Pryor (R) (R)

To Surgeon Lieutenant (R)
T. R. Ebbett

To Act as Surgeon Lieutenant
D. R. Baker (R) (R)

Permanent Promotions
to date 30 June 1969

To Surgeon Captain
C. W. Evans

To Surgeon-Commander
M. L. Cowley M.B. B.S. (R), F.R.C.S.
A. P. D. Macfarlane M.B. B.S. (R)

To Surgeon-Commander (R)
R. C. Buchanan

EX-GRATIS

Surgeon-Commander R. J. Sawyer OBE
has been awarded
the 1969 Cross of St. George for Services
to the Order of St. George (Scotland).

The 1967 (1968) Edinburgh Prize has been awarded to
Sergeant-Commander C. B. Gardner for his work as
Surgeon of the Royal North Clyde Development
Centre, at Rosneath Island, Glasgow, Broom.

CONSULTANTS, SENIOR SPECIALISTS AND SPECIALISTS

The following professional sub-sections are
discussed:

Cerebrology
Surgeon
Sergeant Lieutenant (Consultant) R. F. Dale

Neuro-Specialism
Neurology
Sergeant Lieutenant (Consultant) C. D. Duffin
O.R.L.
Sergeant Lieutenant (Consultant) R. J. M. Gough
Paediatrics
Sergeant Lieutenant (Consultant) L. J. Jones

Urology
Orthopaedics (with the
Sergeant Lieutenant (Consultant) R. J. Rye
Dermatology
Sergeant Lieutenant (Consultant) C. F. Searles
Surgery
Sergeant Lieutenant (Consultant) W. F. J. Cope
Sergeant Lieutenant (Consultant) T. J. W. Spalding
Otolaryngology
Sergeant Lieutenant (R) R. J. Higgins

Psychiatry
Sergeant Lieutenant (Consultant) R. D. Evans
Surgical Lieutenant A. R. L. Griffiths

DISCIPLES OR QUALIFICATION

Sergeant-Commander P. J. Redford—MPCOL
Sergeant Lieutenant (Consultant) W. F. J. Cope
—FRCR (Radiotherapy)
Sergeant Lieutenant (Consultant) T. J. W. Spalding
—FRCR (Radiotherapy)
Sergeant Lieutenant J. M. Bennett—MRCP

NEW ENTRIES

Sergeant Lieutenant (Consultant) M. J. L. as
Sergeant-Acting Lieutenant L. P. Cope, M.B. B.S.
(Jamaica) C. A. Mather M.B. B.S. (Trinidad) W. J. A. Smith
Sergeant-Acting Lieutenant (R) P. G. L. Jenkins
J. P. McNeill M.B. B.S. (Scotland)

RETIRES

Sergeant-Commander A. C. Chalmers
Sergeant Lieutenant (Consultant) R. F. Dale

PROMOTIONS

To Superintending Nursing Officer
Miss D. Williams

To Senior Nursing Officer
R. B. Day

OTHER QUALIFICATIONS

The following have been awarded the degree of
Bachelor of Science in the Dental Discipline:

Principal Nursing Officer M. E. Williams RMC
Senior Nursing Officer M. Brown

TRANSFERS TO FULL-TIME CAREER COMMISSION

Superintending Nursing Officer
J. C. Brown, L. J. Ransome

TRANSFERS TO RESERVE CAREER COMMISSION

Senior Nursing Officer, J. P. Dainton, O. S. Garry
J. M. O'Brien, C. A. Tomlinson

MEMBERS OF COMMITTEE ON CARE SERVICE COMMISSION

Senior Nursing Officer R. H. Arnold

NEW ENTRIES

Senior Nursing Officer (Miss) P. B. Kelle
Nursing Officer (Miss) M. Dean
Dental C. M. D. Humphrey (Miss) P. E. Gossens
(Miss) P. J. Johnson

RETIREMENTS

Superintending Nursing Officer M. E. Glegg
Superintending Nursing Officer M. A. Ryan
Superintending Nursing Officer H. J. Kent
Senior Clinical and Quaternary Officer S. M. Brown

ROYAL NAVAL RESERVE

APPOINTMENTS AND PROMOTIONS

As Quota & Temporary Dental Surgeon
1 January 1959

Surgeon Captain (D. H. Gurnell) (R's reserve)

As Principal Medical Officer (Reserve)
1 December 1958

Surgeon Commanders 1 M. M. Webb (R's reserve)

To Surgeon Commander
D. M. Wright (R's reserve) P. Wainman (R's reserve)

To Surgeon Lieutenant Commander
M. C. P. Williams (R's reserve)
P. J. Atkins (Reserve)

To Acting Surgeon Lieutenant
R. P. Barker (Reserve)
G. D. Gardner (R's reserve)

To Surgeon Lieutenant
A. M. Arnold (R's reserve) P. Field

REQUIRED QUALIFICATIONS

Surgeon Lieutenant Commander M. Fox (Reserve)
—(R's reserve)

NEW ENTRIES

Surgeon Lieutenant Commander
D. B. D. Roberts (R's reserve) First
Postgraduate Surgeon (R's reserve)
G. B. Evans (R's reserve) R. P. Fox
D. G. Martin (R's reserve) P. H.
C. Thompson (R's reserve)
A. L. Thompson (Reserve)
M. J. Evans (Reserve)
Postgraduate Surgeon Lieutenant RMC
C. P. Reynolds (R's reserve)
Postgraduate Surgeon Sub Lieutenant
C. B. Barker (R's reserve)
P. L. Jones (R's reserve) (Reserve)
J. P. Robinson (Reserve)

APPOINTMENTS

Surgeon Commander D. W. Roberts RMC (Reserve)
Surgeon C. Gossens (Reserve)
G. E. Wainman (R's reserve)

Informal Note: No application by any personnel
whose names occurred in the Service News during the
period in and from the Dental Secretary

ARE YOU CORRECTLY ADMINISTERED?

The names and addresses of subscribers to the Journal of the Royal Naval Medical Service are being computerized. Some 1,000 names appear in a computer database which, if it is handled properly, is a mistake. In order to ensure that this database is as far as possible kept up to date, all subscribers' addresses should send all personal enquiries and requests to complete the Journal from Volume 1 of 1991 to the Editor's correspondence. The form may also be used to notify future changes of address.

To: Editorial Secretary, Journal of the Royal Naval Medical Service, Minotaur House, Alexandra, Chertsey House, PO2 3DL.

Please send my correspondence to:

SURNAME _____ INITIALS _____

NAME/TITLE _____

HOME/OFFICIAL* ADDRESS _____

From _____

Country _____

Signal _____

Signature _____

Date _____

* Details as appropriate



Flag Officer (Health), Royal Naval Medical Service, responding to emergency surgery in the operating theatre, HMSA, HMSA, HMSA.



JOURNAL of the ROYAL NAVAL MEDICAL SERVICE

Editor: Member of the Royal Naval Medical Service and a representative of the medical profession in the Royal Navy

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Table 1

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For the purposes of the present study, the authors used the following criteria for the selection of the articles: (a) full text of relevance to the topic; (b) the most recent and available of each author; (c) in the past 10 years; (d) the article should be published in a peer-reviewed journal. The authors searched extensively for the use of the term, the use of the present study, according to the first step of the study. The use of publications without abstracts and first two full-page numbers. The articles included in the review of publications are published in the year 2010.

Reiter MA, Stevenson EJ, Jones EP. Cold infection: relevance for the evolution of human and nonhuman primate herpes vii susceptibility during cold challenge. *J Exp Med* 1994;179:121-30.

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2. International Classification of Medical Injury Database. Guidelines regarding the submission of information to the database. *Am. J. Orth.* 1993;28:417-420.

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Keywords: child sexual abuse; disclosure; self-blame; social support

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Abstract: Rates and patterns of decline are related to species size and life

Editorial:

Medical Employability— the Doctor's Dilemma

The Royal Navy is facing an increasing dilemma on the subject of medical standards and employability. On the one hand it is essential that enough trained personnel are available to man the Fleet in both peace and war and that personnel are employable in the shore roles. In times of war, manpower shortages should not be compounded by personnel, and Commanding Officers have to fight to keep it fit over. On the other hand, personnel are increasingly more difficult to recruit, more expensive to train and add a considerable extra burden to the Defence Force when recruited from the Service. It is therefore essential that trained personnel are retained wherever circumstances allow.

The process of assessing whether serving personnel whose health is permanently compromised are fit for continued duty is in two stages. The first is a Medical Board of Surgery (MBS) where the current medical category is determined and hence the drilling availability. Personnel considered fit for Permanent Duty (PD) for Naval Service are graded P1 and referred to MBS for re-evaluation. Those whom the Board consider could carry out some form of limited duty are graded P2 or P3 with appropriate restrictions (eg No Sea Service, Civilian only, Temporary Active only and Permanently restricted, and where an effort is being made P2 yet to follow Naval standards for a specific task or branch. Existing standards for Border reclassification is a good example of the former. In addition, these personnel decline to within the parameters of the Board of Trade standards. All those downgraded permanently are then referred to the Royal Naval Medical Employability Board (RNMEB) for consideration.

The RNMEB considers employability factors when downgrading a case. The medical is a role provided by the Support Committee (Medical Medicine and Training) and non Medical Consultants (Medical) of the MBS documents, are available for review by other Board members. A member of the Staff of Director Naval Manpower and Planning (MacP) for actively maintain the manpower considerations such as Branch shortages, RealTime status etc and a member of the Staff of Director Naval Manpower Considerations ensure the individual's service conditions are not compromised. The Board Secretariat (NPM) provide input on any legal issues and on cost considerations.

Having considered all factors of the individual case, decisions on employment restrictions are made and the results communicated to individuals by Commanding Officers. The Civil and Royal Medical Medical Board of RNMEB performs a similar function with regard to employability and is unique for members of the Royal Marine Corps.

As the implications of the downgrading through are reduced it may well be that medical standards for duty in the Service will have to be relaxed. Inevitably, some of the severe decisions made in Restraining Officers will result in more MBS/MBS cases. The pressure upon all concerned Medical Officers and their Consultants as paymaster will increase as they attempt to balance the need to retain limited personnel against the human impact factors of the decision and impact with which they perceive. The concept of caring health professionals can be severely tested in the case of any individual whose financial welfare has been

employed by a Medical Board of Service dentists, even when the terms of discharges as defined by appropriate RMO and QIRM regulations relating to medical standards have been explained. But a point is inevitably reached where the balance has to tip towards the

acknowledged needs of the Royal Navy for its various elements to, whatever concerns of the Medical Officers attending and conducting the RMOs.

It is certain the Royal Navy's and the Defence's Defences will continue



Fig 1. Medical Category?

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Caffeine and Caffeinism

D. C. Mackay and J. W. Rodins

Abstract

Coffee is a widely consumed and generally beneficial drug. However, whilst safe in most healthy adults, it can precipitate hyper-tension in susceptible subjects. A case of caffeine-induced pre-eclampsia (gestational-tension) is reported as an extreme example of this.

A study of 50 hospital inpatients revealed that only 40% of these consumed sufficient coffee to produce symptoms of caffeine. It is thus recommended that all patients should be discouraged to use coffee and other stimulants, which caffeine should be considered as a differential diagnosis of many states.

INTRODUCTION

Coffee is a widely consumed beverage which is widely regarded as the form of low caffeine dose, safe drink and stimulant, as well as being found in many brands of analgesic and cold remedies¹ (Table 1).

The reasons for consuming coffee are social, pleasurable and possibly medicinal. The latter suggestion is probably the result of both pharmacological and behavioural factors. The stimulant effects of caffeine on the central nervous system and the resultant increase in mental performance and reduction of fatigue are of apparent value.² However, coffee consumption is firstly expressed as oral caffeine habituation and may in part be due to conditioned behaviour. The first time most women or babies as a result of using the coffee breaks and waking down the coffee (and a child) may be its recognition of contributing stress to the placental effect of caffeine per se.³

Over established, sustained caffeine use, symptoms may be precipitated by a "rebound" syndrome, as the brain habituated suppression being sought to order to maintain the pleasurable effects of caffeine. There is also evidence to suggest that some results to the persistence and withdrawal syndromes which sometimes sustained usage.⁴

Several studies have shown that the quantity of caffeine absorbed by the majority of the population produces no side effects and is generally beneficial for the chronic alcohol abuser.⁵ However, when intake exceeds around 500 mg per day, increased symptoms become apparent in most individuals.⁶

The classical effects of caffeine dose are well documented, namely, as a stimulant which induces sleep deprivation, fatigue of systems, maintaining wakefulness to rates of an awake being, highly varied and varied.^{7,8} Quantitative assessment of these symptoms show that caffeine causes the experience significantly raised anxiety levels.⁹

Various other physiological symptoms associated to the anxiety state. These include tachycardia, palpitations, lower stool as does other reported pain responses in the hands and feet, numbness in those of the eyes under dynamic factors and muscular twitching, more persistent dry mouth and quivering voice. Caffeine regularly results in insomnia, especially if consumed in the evening.¹⁰

Adverse reactions also arise in a form of chronic caffeine dependence amongst very high producers among patients with a high caffeine intake.¹¹ Also patients show, withdrawing states, have been described in a few cases.¹² The following case report serves as an extreme example of the effects of caffeine.

Dr David Mackay, Lecturer in Medicine, is a House Officer in Royal Naval Hospital Plymouth, Devon. Captain Rodins is a Clinical Consultant in Psychiatry in the Royal Naval Hospital Haver.

Table 1 Caffeine content of some common products

Source	Approximate amount of Caffeine
Coffee	60-140 mg/cup
Tea (leaf)	30-70 mg/cup
Tea (bagged)	40-100 mg/cup
Decaffeinated coffee	3-8 mg/cup
Cola drinks	20-80 mg/bottle
Cocoa	5-20 mg/100g
Small chocolate bar	20 mg/bar
Over the counter cold preparations & stimulants	100-200 mg/tablet

CASE REPORT

Chief S is a 34 year old senior rating in the Royal Navy. He is married, smokes about 40 cigarettes a day and drinks occasionally. He had no past medical history of note and a stable personality.

His usual job involves a high degree of activity with long hours at work in a highly responsible and stressful position. He was directed to see his senior medical personnel after the regular suffered a stroke. This caused him a lot of worry.

Four days after coming up to his normal job he developed paroxysmal dizziness. Three days after he overheard two friends in conversation as he and another on duty sat against himself. Investigation by his senior officer showed no evidence of tachycardia but he continued to feel (dizziness) and staggered whilst on a potential witness. However his weight was relatively intact, and he lived hard to sustain these delusions. No hallucinations or other psychotic phenomena were present.

At that time Chief S was alone and isolated. He was hypersensitive responding to sudden noises etc. His sleep was disturbed and he ate markedly less. Physically he had a rapid irregular and palpitated rate. His weight had gone down by a few pounds although his appetite was excellent. No other symptoms were present and examinations revealed only a tachycardia and a thin tremor. In view of his anorectic state was remarkable.

The paroxysmal dizziness ceased after he was reassured and reassured and went on such days. However the anxiety state continued.

Further enquiry revealed a previous caffeine intake. He usually consumed over 12 cups of tea or coffee a day and considerably more after his return from sea. Rationing other sources

has risen to 1800-2000 mg of caffeine per day.

Following three weeks drinking only decaffeinated products Chief S felt much more relaxed and his symptoms had resolved.

The story is one of an otherwise, high caffeine, acute set against a background of a somewhat labile and recent major life events. This combination of increased caffeine intake during an unusually stressful period strongly preoccupied the paroxysmal state in Chief S. The observation that symptoms began about four days after the onset of these events and that they ended when Chief S was relieved from the stressful situation and reduced his caffeine intake would tend to support this conclusion.

DISCUSSION

The incidence of caffeineism appears to be relatively common in North America and in 20-50% of adults consumed more than 500 mg of caffeine per day and 10% reported frequent symptoms of caffeineism. Gander *et al* (1964) that 15% of hospital outpatients consumed more than 750 mg per day. When population surveys were considered this figure rose to 25%.

Patients attending BMH Hinder during a one week period were questioned in detail on their usual caffeine consumption from all sources. In total 44 medical inpatients and 44 psychiatric patients were interviewed.

Among the medical patients consumption varied from 12 mg up to 1730 mg per day with an average intake of 440 mg per day. 27% of patients regularly consumed under 200 mg caffeine per day, 21% between 200 mg and 750 mg per day and 20% over 750 mg per day (Table 2).

Table 2. Caffeine intake of medical and psychiatric patients

Caffeine intake (mg/day)	Medical (N=44)	Psychiatric (N=19)
<250	23%	2%
250-500	32%	15%
500-750	23%	32%
750-1000	18%	37%
>1000	3%	38%
n = 28	1.83 ± 1.2	3.00 ± 0.9

The caffeine intake in the group of psychiatric patients varied from 250 mg to 1450 mg per day, with an average value of 770 mg per day. Only 20% of these patients consumed less than 500 mg of caffeine per day, 33% between 500 mg and 750 mg per day, and 47% over 750 mg per day (Table 2).

The level of caffeine intake among the psychiatric patients was significantly greater ($P<0.01$) than that of general medical patients.

DISCUSSION

These data demonstrate that a significant proportion of all hospital patients (about 50%) and especially psychiatric patients (60%) consume sufficient caffeine (more than 500 mg per day) to produce symptoms of caffeineism. In extreme cases, such as that of Case 5, this can be all symptoms. However, it may be useful to question all patients on their caffeine intake as the same way that alcohol intake is recorded. Finally, in all cases involving anxiety type symptoms, it is important to consider caffeine as a possible diagnosis.

Acknowledgements

We would like to thank the psychiatric department staff for their help.

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Is the Pattern of Acute Decompression Sickness changing?

J. J. W. Sykes

INTRODUCTION

In considering the possibility of a changing pattern in the presentation of acute decompression sickness, we should understand what we mean by change and how it can be measured or gauged. Change is a relative term which is very dependent on the point from which observers look at data. The data were raised by observers in different positions may be unrepresentatively different or, conversely, the rate of change may be gaugable from a short-term value set at well known intervals or compressed, a sensitive response to the "trend" suffered by events. Finally the rate itself of the change should be of such a degree that the measurement of the pattern may be effected—three Walden's concept of the maximum change necessary to change a player's mind.

CLINICAL IMPRESSIONS

For the point of observation for this paper was two to only one hundred cases and the literature. Varying material when I discuss a condition as a particular instance may also provide a data point for comparison.

The following description of decompression sickness would not be in the least controversial presented as physicians specializing in hyperbaric medicine. It is a disease requiring exposure to increased atmospheric pressure, the symptoms developing on or after return to normal pressure. The disease is characterized

by moderate to severe pain in one or more extremely usually affecting larger joints. It may be accompanied by general or local paralysis often confined to the lower limbs and associated with vestibular disturbances. Crooked symptoms including rashes may also occur. Multiplicity of symptoms is a feature of the disease. The description was written by the American physician Smith in 1871¹ hence the condition has been classified as "Smith's" DCS.

A description used by Smith^{2,3} was based on the view of blood vessels cardiovascular pulmonary vascular and dermal. This view is correct has been modified to reflect the potential involvement of the presentation in the central. Cause of subsequent therapy may be influenced by the diagnostic category into which the patient is placed.

Type I or "mild" DCS affects the skin as rashes, itching and occasional subcutaneous nodules and joints with mild to severe pain often starting in a distal site and taking from joint to joint before becoming fixed.

Type II or "serious" DCS affects the central nervous system and therefore may present with any acute disturbance of neurological function. When motor and sensory symptoms and signs are numerous and frequently higher cerebral dysfunction may be evident or subtle changes in mood often and cognitive function.

Involvement of the inner ear with disturbance of balance, vertigo and deafness may occur. The symptoms may be mediated through peripheral or central damage. Severe pulmonary and cardiovascular involvement may occur which are immediately life threatening.

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Table 1 Latency of symptoms of OCS in Towed Workers

Non specific projects	50% in 3 hours—Epsilon ² 75% in 1 hour—Dorado ²
FFC, Taurus, Paraphysan Towed	64% in 1 hour—Lary ² 88% in 1 hour—Lary ²

INCIDENCE

The actual incidence of the disease itself is virtually impossible to calculate. Five symptoms were, including the Royal Navy, by the number of dives performed. At least, estimates have been made for sports divers. While estimates of a changing incidence inevitably clearly indicate a chance for pursuit further in this paper.

LATENCY

A factor that should be considered is that of latency or time to onset of symptoms. Dr Robert Davis² noted that compressed air illness may develop during events from a dive shortly after surfacing or as long as three hours afterwards. This pointed the presence of a respiratory chamber at the dive site and the policy of keeping divers close to the chamber for four hours.

Presented data on latency in towed workers is shown in Table 1. Some cases have been reported as long as 15 hours after entry to the surface and one remarkable patient is recorded who developed symptoms eight days after exposure to pressure. Up to two or three days is generally accepted unless two additional remarks have reported incidents sooner than this. Five would therefore agree with the statement that over 50% of patients with OCS will develop symptoms within an hour of diving and 80% within six hours.

In a review of 1070 highly selected cases of OCS decompression sickness (France)² apparently demonstrated that 50% presented within 12 minutes, 40% presented within an hour and 90% presented within five hours. He noted a difference between the latency of medical versus special and decompression sickness, the latter having a shorter latent period. It is of interest that while this is a highly selective survey in terms of precise and diagnostic criteria over half the records fulfilled being from active underwater workers. Indeed one reveals any major divergence from accepted principles

TRADITIONAL RISK FACTORS

A number of risk factors are recognized with specially in being involved in diving accidents (Table 2). These are defined as generally previously low advancing age, and obesity are both considered to confer higher risk of developing OCS. Similarly the exposure to relevant bubbles may be affected in the number of dives who develop their bubble flying from their summer climates. No information is currently available to assess the influence of fitness to dive. However, failure in most acceptable standards entered in 10% of cases in which 10000% was involved in 1980. In defining acceptable standards, a much more liberal approach is a solution that applies either to military divers (16.8/100.4) or to commercial divers (100/104.0). Reasons for failure might have arisen through lack of acceptable physical fitness in diving with conditions such as asthma which are absolute contraindications.

Table 2 Recommended Divers Screened by MOD in 1980 ($n = 1204$)

Age >30	54% (57)
>40	21% (22)
Obesity as Allergic	8% (8)
Flying after Diving	8% (8)
Medically not fit	10% (11)

NEW RISK FACTORS

Several new and as yet undiscoverable factors would also appear to be associated with some degree of risk. Thermal protection for towed towed divers has improved recently with the advent of inflatable dry suits. Compression as a solution may have a much greater capacity allowing the diver a much longer endurance than he enjoyed previously. The combination of endurance and thermal protection in towed sports divers into the type of diving that requires the obligatory performance of decompression stops. Added by current tables and the

application of the methodology to reflect the decision that the driver is now driving regularly despite the fact the commercial driver is guaranteed as fit (i.e. a full 12% of the sports drivers tested by MDDPS) in the past year despite those 50 cases (Table 3). While a direct comparison with commercial drivers is not applicable, it is noticeable a fact that driving longer than 41 years are statistically required for an adequate support of compensation claim. This level of support is unavailable to the sports driver. The use of driving comparison in drowsiness incidents tend, in some instances, to real time collection of compensation claim has been involved in 42% of 1998 accidents tested. The need towards a targeted use of repetitive driving techniques is noted to be tested in present facilities use of the technique in 42% of patients in a series of research.

Table 3. Factors involved in AD/E test results with DCS tested by MDD in 1998

Driving longer than 30 years—	42%
Driving longer than 40 years—	21%
Driving longer than 50 years—	12%
Aspects test during—	82%
Use of Comparison—	42%

SYMPTOMS

It is generally recognized that just past a drowsiness symptoms is present and through the presence of additional symptoms may well occur. It is identified required that there

various symptoms are recognized and the patient treated correctly as a result. While modern treatment methods using treatment in comparison to the patient are mostly of lower than a result, resulting in a 70-75% cure rate as opposed to 70-75% there is considerable an important source of neurological symptoms in driving accident victims, with the consequent impact on physical and mental resources. The incidence of neurological symptoms has been reported variously in studies in Table 4.

There is a growing feeling that the prevalence of DCS may be changing. In Atlanta last year (1998) the Georgia Medical Advisory Committee Workshop discussed the apparent rise in occurrence of neurological DCS. Comparison with historical data and recent commercial experience¹⁴ suggests a rising trend in the occurrence of DCS involvement in sports drivers. This apparent trend is giving rise to serious concern, which has prompted the review of numbers of sports drivers involved for DCS in those licensed drivers whose problems as noted the Ministry of Defense the number of calls for advice has doubled over the last four years to parallel the number of patients treated has also doubled (and 1). It is noticeable that the above mentioned driving population has doubled in the same period, so that the change in driving habits developed above may account for the increase in the numbers of patients requiring advice or treatment.

LONG TERM HEALTH PROBLEMS

In considering what can be studied, an issue

Table 4. Incidence of CNS symptoms in the presentation of DCS

Cause Workers	Drivers	Commercial Drivers ¹⁴
1. 2% Head ¹⁵	20% Head ¹⁵	1982—53%
1. 4% Loss ¹⁶	7% Head ¹⁶	1983—37%
1. 2% Giddens ¹⁷	27% Head ¹⁷	1984—31%
0. 1% Loss ¹⁸	10% Head ¹⁸	

Table 5. Sports drivers treated or advised by MDDPS

	1985	1986	1987	1988
ADVICE	71	68	82	143
TREATMENT	46	60	51	100
% of patients treated with DCS involvement	64	88	62	67

potential danger is a stress that those who seem to suffer the most are exposed to it for shorter time. There is much to be learnt from the fact that diving is hazardous in the long term and that while the acute problems are well noted, noted and treated, there may be subtle sublethal and potential to pay for repeated exposures to pressure.¹¹ A realistic and sensible approach to identifying potential problems has been advocated based on the stresses in defining the extent of delayed decompression in divers with the post-lung disorders.¹² Concern over the sequelae of diving is not recent.¹³ However, contemporary pathophysiologies of diving and hypoxia disorders have failed to identify specific long term health hazards in divers or latent risk for death for both military and coast.

Recent findings by Palmer¹⁴ that damage occurred in the spinal cords of asymptomatic divers is of concern particularly when such great damage may be reflected by minimal symptoms or signs.¹⁵ Similar findings have been reported¹⁶ indicating the constraint by DCS¹⁷ as a neurophysiological disorder even that it is characteristic of neurological DCS that local, less functional recovery is consistent with extensive permanent cord lesions.

While a wealth of historical and recent data exists on spinal cord DCS, very little information is available on the pathology of residual DCS yet it constitutes approximately 10% of the neurological disorder.¹⁸ Recent studies¹⁹ suggest that abnormalities of cerebral blood flow may be detected in all patients with neurological DCS. It should also be the focus on which we focus our attention. It is cerebral function which has been recognized as a long term health problem.²⁰ The combination of careful clinical observation, pathological studies and imaging, use of new techniques is obviously more self-critical function than it could ever be.²¹

CONCLUSIONS

It is concluded that while a change in the recognition of DCS is not yet demonstrable there is evidence of a trend suggesting an interest in the neurological implications of sports diving. Whether neuroscience technology or development is required and responsible

remains to be seen. However, it may be shown that coincidence that links the professional's swimming remains with potential long term health effects with the separate interest in sports DCS involvement.

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1990 75th ANNIVERSARY

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Motion Commotion—a Seasickness Update

B. J. W. Porges

Abstract

This review discusses current concepts concerning the aetiology and nature of seasickness. The condition is a rare deviation of the more general phenomenon of motion sickness. It may be considered by definition as a central nervous dysfunction, and details of the nature of the putative central motion and control. Drug treatment of the condition is discussed.

INTRODUCTION

It is curious in the history of seasickness studies of the manner and in which it is perhaps frequently discussed as something to be tolerated with the firm belief that has been established in the past. That might account for the space motion sicknessable condition that is currently devoted to the topic compared with the example space sickness which constitutes most of the research in progress devoted to the latter studies for the broader phenomenon of motion sickness. In this review, various of the previous work which covers all forms of motion and seasickness resulting from exposure to the motion of the variety of physical drive transportation modes. Seasickness is the manifestation of the study since that is applicable to this review. While several reviews have recently been published dealing with motion sickness^{1-3,4} with the exception of that by Garvin⁵ there tend to underestimate association of clinical with other manifestations such as seasickness. This review will describe concepts and knowledge that have been recently added to the subject of motion sickness but as to doing with convenience on seasickness.

Although there are many who can be represented by travellers as a variety of vehicles as discussed

as ships, aircraft and cars, the frequency of the symptoms or motion is apparently specific and typically low (less than 10%) in the latter 80% to 95% of the population.^{6,7} Thus, frequency, specifically, is apparent when it is observed that while no one appears to have symptoms on rides of aircraft, associated with a slow covering part of the more rapidly, jiggling horizontally, nearly entire the condition.⁸

CLINICAL MANIFESTATION

Seasickness is characterised by the symptoms of nausea, the most well being derived from the Greek word for a ship.⁹ Thus, nausea usually progresses and possible of vomiting if motion exposure is sufficient. Other symptoms include usually stomach aversion, diarrhoea, salivation and feelings of heat and cold. An aversive sign is pallor and this may be associated with such other signs as changes in respiratory pattern, blood pressure, heart rate and body temperature.¹⁰ However, where changes in these variables occur, they do not appear to do so necessarily either in between individual subjects¹¹ whereas the more acceptable than was, possibly as a result of differing endurance factors. Susceptibility also changes with age, while others, better about two years of age, risk, suffer motion, compared to a maximum between about two and 12 years of age, then progressively decrease so that the incidence is minimal but common beyond the age of 50.¹² Anxiety and depression seem to be factors in determining the individual's susceptibility¹³ while the nature of the surrounding surroundings is important. The presence of particular odours occasionally increases susceptibility. In a few subjects there direct effects on accompanying the sight and sound of fellow

Subject Committee, Tropical Diseases, Prince of Wales Medical Officer, 1983, Sydney.

calculus accounting. Latent, unmet requirements is reported infrequently as being important although objective data do not support this.¹¹

BIOCHEMICAL CORRELATES

Although the pattern of chemical signs may differ in people whose is variable, a more consistent pattern relating to these hormones has recently emerged. It has been known for some time that an algebra of associated with stress exists.¹² More recently it has been shown that increased secretion of growth hormone, prolactin and dehydroepiandrosterone (DHEP) and cortisol result from the release of growth factors.¹³ The development of insulin most closely follows prolactin and DHEP secretion. Such an increase in prolactin and DHEP among other hormones has been observed to accompany the stress induced by isolation from society.¹⁴ With prolactin and DHEP released from the pituitary it should be noted that hypophysectomy in man would not be made without risk.^{15,16} Recently it has been concluded that in man, according to the CRP is associated with the development of chronic diseases and evidence for this has been demonstrated in man.¹⁷ It would seem possible, therefore, that the primary reactions described reflect some more specific internal activity which is responsible for the condition. Possibly it may be that these biochemical changes represent no more than a general response to the stress of chronic isolation.¹

NEURAL MISMATCH HYPOTHESIS

The occurrence of symptoms, and indeed chronic disease generally may be understood by reference to the neural mismatch hypothesis.^{18,19} Fig. 1 shows diagrammatically the sensors which appear to provide the brain with information to achieve adaptation of the body with regard to its surroundings. It is apparent that three inputs to the CNS, the sense-receptor inputs, the attitude and the vestibulo-lateral prepositioners. The neural mismatch hypothesis states that in an individual without direct input, the information being relayed to the brain by these sensors is mutually conflicting and it therefore with past experience is represented by a neural state of equilibrium. The presence of such sensory constants a mismatch between current and past experience which is detected by a neural comparator and it is the presence and magnitude of this mis-

match that leads to the development of chronic symptoms. An exposure to motion sickness, the neural state is progressively updated, eventually accepting the usually unfamiliar motion environment as the prevailing normal. As this updating occurs, the magnitude of the mismatch, diagnostic adaptation provides the severity of the vestibular signs, and finally resolves completely.

It follows from the neuro-mismatch hypothesis that on return to a non-motion environment an adapted individual is likely to experience symptoms after about a month as is witnessed by the home on the sea, vestibular signs environment. Such a phenomenon has indeed been noted in man in real life circumstances,²⁰ but it is usually no more than a mild case compared with the preceding sickness on initial exposure to motion. The occurrence of real life differences from previous to the neural mismatch concept and as mild return is explained by the resistance and speed with which the neural state adapts to the non-motion environment with which it has been strongly trained familiar to on the basis of long experience. Neural mismatch suffered in some motion sickness can arise between the eyes and the vestibular system, as in ship comparisons lacking an external view of the horizon. Similarly there can be mismatch between the two components of the vestibular system, the otoliths and the semi-circular canals. This also occurs at sea, although here the otolith canal mismatch may, not at first sight be obvious. However, on the prevailing up-and-down displaced motion, the otolith detect an apparent cyclic change in the magnitude of the gravity vector. The operation of the neural state leads to an expectation of synchronous changes of there is such a gravity vector change such chronic disease in the magnitude of gravity are actually normal operating rates of the neural state. The responses of motion is not inhibited however, and a neural mismatch condition results. This conflict will now be expressed in any visual observation about the world to be provided by the sight of a horizon. A number of possible mismatch conditions can arise in different circumstances.^{18,19,21}

The mismatch hypothesis also includes the concepts of acceptance, adaptability and resistance. That state that is most subject to adaptation is susceptibility.²² It is an individual with high susceptibility, the ability required to motion exposure evokes a relatively more powerful subjective experience. That results in a more

two maxima in the frequency spectrum of the motion of the helicopter extracted in the cockpit. The frequency range covered is less than those experienced in the everyday non-suspense locomotion of walking and running and the occurrence of optical stimulation. The unfamiliar low frequency motions associated with helicopter transport are presumably unimposed controls, in a way that is similar to the control demands caused by constraints to the navigation of vessel and aircraft during spatial translation external to it.

ACTIVITY

There has been a number of laboratory studies to establish dose aspects of motion which produce motion sickness. These have been summarised by Lawther and Griffin¹⁴ and show that for vertical oscillatory motion the motion sickness frequency ranges can be reported as falling between approximately 0.05 and 0.5 Hz. A particularly important study¹⁵ exposed subjects to vertical oscillation for up to two hours at a number of different frequencies and intensities and produced the data from which Fig. 2 is derived. This study is a key contribution to the quantification of the phenomenon of motion sickness. Reference to Fig. 3 shows how the key given motion intensity (given by RMS acceleration) and its frequency for maximum sickness intensity and this frequency, regardless of intensity, occurs at about 0.2 Hz.



Fig. 3 Dependence of motion sickness on a function of frequency and acceleration, derived by 3-D computer simulation to verify small experimental observations (after McGill et al. 1978a,b).

THE SHIP MOTION ENVIRONMENT

The auxiliary ship motion can be considered on basis of a combination of vertical displacement (roll) translated approximately perhaps twice together with the rotational elements of pitch and roll (ω_p/ω_r). It is apparent that motion in pitch results with progressive addition to heave in position as a ship that can move rigidly translated from the pitch axis. Ship oscillary motion appears as frequencies ranging from 0.1 to 0.5 Hz¹⁶ and extended ship hull can be expected to be more used with reduced motion frequency within the frequency range 0.2-2 Hz.



Fig. 2 Diagram to show the three components of oscillatory ship motion.

INCIDENCE OF SEASICKNESS

The incidence of substantial sickness, highly with the intensity of heave including the contribution of pitch to heave, with only a comparatively small additional contribution from the nearly constant aspects of pitch and roll (ω_p/ω_r). For periods of exposure to ship motion of up to six hours a Motion Sickness Dose Value (MSDV)¹⁷ has been derived¹⁸ which quantifies measured motion dose and which may be given by

$$\left[\sum_i a_i^2 \omega_i^2 \right]^{\frac{1}{2}}$$

where $a_i \omega_i$ is the acceleration frequency weighted for seasickness¹⁹ and T the duration of motion exposure. This expression has now been benchmarked for periods in excess of six hours and the effects of adaptation are therefore not described. This quantification of dose enables a variety of sickness prediction to be made. The percentage of primary who may

range—50 to 80%¹² when the sea was calmish, which may vary according to the exposed population, but is above 1/3 for a mixed population of unexposed male and female sailors.¹³ The incidence of seasickness in RN ships has been documented and analyzed by Pellybridge¹⁴ this week, showing an incidence of from 15 to 50% incidence being shown to be greatly related to ship size. Increased ship size, as has been noted,¹⁵ reduces the frequency of movements or motions and this usually means a more easy time for the guest, consequently increasing of 1/3 Hz.

OPERATIONAL SIGNIFICANCE OF SEASICKNESS

While it is a matter of common observation that seasickness can be debilitating, little has been done to establish whether and to what extent a sailor's performance is impaired by the condition, although it would appear that seasickness can, be incapacitating.¹⁶ There is a paucity of literature on the effects of seasickness on performance; much of the data having been produced haphazardly from trials comparing the seasickness efficacy of drugs. It would appear a conclusion that there is indeed a performance penalty to be incurred when personnel suffer from seasickness¹⁷ a perceived performance impairment has been demonstrated by Pellybridge¹⁸ although the data used in this work were subjective, being generated by a questionnaire. The work states that 80% of

seasickens suffered on the Royal Navy felt they had some additional work difficulty on the days when they were seasick.

NEUROPHARMACOLOGY OF SEASICKNESS

Many drugs have been tested¹⁹ to assess their prophylactic efficacy in humans and various criteria generally.^{20,21} These drugs can show efficacy from one or more of the following actions.

- Anti-cholinergic or hypnotic
- Anti-histamine (H₁ antagonist) or cocaine (not also a Ca⁺⁺ antagonist, cyclized protein kinase)
- Sympathomimetic or phenothiazine

It is thought that the efficacy of these drugs depends on cerebral activity rather than on any peripheral action²² although there is one very clear criterion contributing to efficacy. The central organization of the vomiting response is motion or dependent on the vestibular nuclei, the vestibular cerebellum, the chemoreceptor trigger zone (CTZ) located in the area posterior to the fourth ventricle and the vomiting center, the last being well-defined easily anatomically but apparently located at the brain stem.^{23,24,25} (Fig. 4)

The motion sickness prophylactic drug that has received most detailed study in plate would appear to be hyoscine. It was generally the



Fig. 4 Neural structures in motion sickness (CTZ = Chemoreceptor trigger zone (Modified from Brown, 1977).²⁶)

current drug to be demonstrable in having such activity and was the subject of extensive research during World War II into the problems of smoke sickness in troops transported in supply ships and landing craft.¹ Much of the published work concerning hyoscine has been comparatively ignored and a dose-response sigmoid curve for the drug has been derived.² Hyoscine shows consistent competitive effects in relation to other anticholinergic pharmacologic drugs,^{3,4} and indeed it is frequently regarded as a reference drug against which others might be compared. The peripheral nervous system effects of hyoscine are to block the muscarinic actions of acetylcholine although it is the central neurocholinergic actions of hyoscine that are thought to be operative in its efficacy in smoke sickness.⁵ It has been proposed^{6,7} that exposure to various drugs act as a hypothesized balance between central cholinergic and adrenergic systems which are disturbed and which act in conjunction to vascular regulation are regulated during exposure to motion. Motion sickness would occur when central cholinergic activity exceeds the capacity of central adrenergic systems to balance it. Indeed when an excess of central acetylcholine is brought about by the administration of a cholinesterase inhibitor such as physostigmine a pharmacologic response that resembles motion sickness is produced.⁸ If anticholinergic potency is reduced by drugs, or if adrenergic activity is similarly increased, the two systems may be prevented. H. Mollnes and co-workers have, in studying depressor action on top-cholinergic activity,⁹ although motion sickness efficacy does not appear to correlate with top-cholinergic potency.¹⁰ The general action of anti-histamines may be to block H₁-receptors that transmit a histamine mediated augmentation of central cholinergic activity.¹

Phenothiazines, a pharmacological with marked sedative/analgesic potency, it almost alone among the phenothiazines in possessing efficacy in motion sickness.¹ The phenothiazines are thought to prevent vomiting from causes other than motion (emotions) through their blocking action on dopamine receptors in the CTZ.¹¹ It should be noted however that other dopamine antagonists have also given disappointing or null results in motion sickness. Triamterolene does not appear to be effective^{12,13} while domperidone has only been reported as giving results that are superior to placebo about what gives in the treatment with promazine.¹⁴ Among other agents tested as having efficacy

ginger¹⁵ has not had its claims substantiated but controlled laboratory tests¹⁶ clearly show its growing interest in the range of 5-HT antagonists¹⁷ which are being developed by the pharmaceutical industry. The 5-HT₂ receptors in particular have powerful anti-emetic properties which are promising following exposure to radiation and cytosine drugs.¹⁸ This sub class may therefore be effective in motion sickness although a recent experiment¹⁹ has failed to substantiate such activity.

Little work has been devoted to the question of whether growing circumstances drugs alter the rate at which central responses to sleep motion occur. One of the few studies to investigate this topic²⁰ suggested that sedation was facilitated by promethazine with hyoscine but this appeared to be as a result of the sedation it makes provided by medication thereby enabling treated subjects to accept greater motion doses compared with those in placebo. The conclusions of this study are not clear-cut because both treatment and placebo groups received water in effect confounded.

SEASICKNESS PROPHYLAXIS IN THE ROYAL NAVY

The drugs used in the Royal Navy in severe seasickness prophylaxis are for all practical purposes either hyoscine or more usually scopolamine (Draquene)²¹ While hyoscine is likely to be effective within one hour of exposure,²² scopolamine requires more than two hours and up to five hours for efficacy to be apparent.^{23,24} A variable regimen for hyoscine is 0.4 mg 4 hourly²⁵ while for scopolamine this would be 50 mg initially followed by 15 mg 4 hourly.²² However it should be noted that there is a lack of data to document the efficacy of constant use of scopolamine although the anecdotal evidence from its widespread service use should not be discounted. Such use as has been published was on yachtsmen and comprised an open uncontrolled survey²⁶ and a single comparison against placebo in which motion was not controlled.²⁷ These suggest activity with a low incidence of side effects. The overall paucity of data relating to the efficacy of scopolamine is currently being addressed by a trial of scopolamine against hyoscine on RCM ships at sea.²⁸

SIDE EFFECTS OF DRUGS

Both hyoscine and scopolamine have side effects and these have performance implications. Even when given according to the regimens or recommended spectrum may produce central

action and the prolonged vestibular effects of dry mouth and dilation of the pupil causing blurred vision.²² It should be used with care in the young and elderly, while it is contraindicated in patients with glaucoma.²² Cinnarizine is similarly contraindicated and would also rarely give rise to dry mouth and blurred vision from its possible indirect histamine activity as an H₁-antagonist.²² The relatively sedating properties of tyrosine and cinnarizine may well account for the psychological performance impairment that has been demonstrated with both drugs. For example when given in a laboratory non-motion environment they demonstrated impairments to sustained attention and sustained attention, although psychomotor function is unimpaired by the ability to track a target apparatus (stepping).²² However, in a non-motion ship motion environment, performance deteriorates when an unconscious prophylactic anti-seasickness appears to be more susceptible to that observed on placebo. The pattern of drug side effects observed between cinnarizine in the context of symptoms reported from a concurrently conducted placebo group²² to that drug and motion appear to account in their effects.

OTHER TREATMENT OPTIONS

Royal Navy practice in the drug prophylaxis of seasickness differs from other other names particularly the United States Navy²³ which makes widespread use of tyrosine pumpkins in its practice in a biologically enhanced formulation (see a letter in part 2) as in clinical work behind the air glucose form-Glucose.²⁴ This drug is effective^{25,26} but may have interacted with it a performance decrement that corresponds to an oral dose of 0.1 mg,²⁷ although other workers conclude that it is unassociated to performance decrement.²⁸ In one instance confounded status and visual impairment may be produced by an oral.²⁹ The tyrosine pumpkins has recently been introduced into the UK as a prescription only item. Another drug prophylactic regimen adopted by the USA is a combination of an anticholinergic (typically promethazine 15 mg) with the sympathomimetic ephedrine 30 mg. Laboratory studies³⁰ would suggest that both a combination is more effective than either drug given singly and the additive action of the anticholinergic is followed by the stimulant property of the sympathomimetic. However, due to demonstrate the efficacy of such a regimen in a report does have it as direct too

appear to be available. Recently an extended oral dose device Seaband has received publicity as a means of treating seasickness. The use of this device in the application of pressure over the Nausea point, located within inner elbow, 5 cm proximal to the wrist point for a good response, as a the hand and gripping from the outer surface. The Nausea point is referred as being a complex in the control of nausea and vomiting, although contradictory results have been obtained when acupressure has been applied to this point.^{31,32} Although Seabands have been available for at least four years in the USA, no controlled trials demonstrating their use have been published. However, their manufacturer responsible for an uncontrolled evaluation in RFA, results suggest they may be effective³³ although they showed no benefit when used in a laboratory trial.³⁴

DESENSITISATION

Of the non-pharmacological treatments for seasickness, perhaps desensitisation offers the best hope for the chronic sufferer of severe seasickness. Desensitisation to motion sickness has taken on the importance that controlled repeated exposure to graded seasickness instead of progressively increasing sensory stimulation enables a degree of long lasting tolerance to otherwise provocative motion.³⁵ This approach has appeared to meet with particular success in the desensitisation of women.³⁶ However, it should be noted that desensitisation, because it requires the sustained involvement of trained staff, the availability of specialised equipment and take-up to one month in duration, is not a practical proposition for use but a few sailors. The technique while attractive in reducing sickness in extensively trained crew groups with no reserve is less practical in the larger seagoing population. Nevertheless, in the training for shipboard weapon systems operators becomes more extensive and specialised a desensitisation option could be desirable for certain weapon operators as well as for the tubular and severe sufferer who might otherwise have to be transferred from the Service.

TREATMENT OF THE ESTABLISHED CONDITION

The number of clinical studies for motion sickness is large.³⁷ Although there are other place pharmacological or non-pharmacological in many controlled trials showing efficacy, have with few exceptions only been reported for drugs. Both

drug studies have usually been concerned with peripheral rather than with the treatment of the established condition. However if drug prophylaxis of seasickness has failed it is likely that the same drugs will have some efficacy in relieving the symptoms of the established condition. If symptoms have progressed to severe nausea or vomiting, initial preparations are unlikely to be absorbed. Under these circumstances, the transdermal formulation of hyoscine could be expected to retain some efficacy while hyoscine may also be suitable given intramuscularly at doses of 0.5-0.5 mg.^{10,11} Alternatively the patient may be given antiemetics. All this is¹² In these circumstances where intramuscular injection has been resorted to the initially sedative action of the drugs should be anticipated. The patient should be removed from duty and managed in the ship until help with all appropriate general measures of comfort (immobility and continuous being given together with such things as food and electrolyte balance is achieved clinically.

CONCLUSION

The system has shown how the neural movement concept helps to explain the pharmacology of seasickness by virtue of centrally generated conflict in the motion information relayed to the brain by the eyes, the inside, and the vestibular details in the ship motion environment. The neural primitive aspect of ship motion is the oscillatory vertical translational movement as before, with a contribution to that movement from pitch, while the angular motions of pitch and roll provide little by way of additional vestibular input. Further it has been noted that seasickness appears to be associated with a divergence in the neural balance of disturbance and adaptive activity, with disturbance activity predominating. The drugs that are effective in preventing or breaking the condition are thought to act by restoring neural balance and adaptive balance. Hyoscine, an anticholinergic, is the best demonstrated and probably most effective single drug available for the situation. However it has been raised with a note of fire which suggests compatibility compared with certain anticholinergics, notably among which is scopolamine. Scopolamine is also demonstrated effective but their usage has generally been as an adjunct to treatment with hyoscine or in the last instance hyoscine is the drug of choice where rapid onset of efficacy is required. For cases of severe, acute hyoscine or an anti histamine

preferably given according to previous experience would be appropriate. For passengers anti-emetics are recommended and high doses of these could be used with advantage when the sedative effects may be desirable although no therapeutic break-through in the prophylaxis and treatment of seasickness appears in prospect. A number of manifestations of established drugs, as well as a few new compounds, hold some promise for the future.

A somewhat mechanistic approach has been adopted in this review to a clinical phenomenon in which there is a number of contributory subjective factors. This is deliberate and attempts by following the variety of mechanisms at work in the development of the condition to restore the balance in respect of the more subjective and previously mentioned approach that has dominated past strategy. Thus while not denying the importance of maintenance and well-power and not questioning the role of sounds, sights and smell and recognizing that individuals do have varying tolerance to the condition it is concluded, even that seasickness is a very tangible phenomenon and clinically easy with a defined physical stimulus. Its development can now be predicted and documented in quantitative and qualitative terms, while the timing and magnitude of the phenomenon is revealed to be unrelated to past events and future efforts.

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Changing trends in Dental Restorative Treatment needs of Naval Recruits 1987-89—Disease or Diagnosis?

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Abstract

The restorative treatment needs of 1445 young men and women who joined the Royal Naval in 1987, 1988 and 1989 between January 1987 and April 1989 are presented. A marked increase in the numbers of filling required led to a decrease in the treatment considered to be adequate to prevent a decay flare-up for treatment in a fixed restorator. Widespread over-diagnosis of carious lesions may have contributed to this. The rate of disease and extent of restorations are discussed.

INTRODUCTION

Decreases both in the prevalence of dental caries in children and young adults have been reported over the last 15 years or so in most developed countries.¹⁻⁴ Because of this recognition,^{5,6} The United Kingdom Child Dental Health Survey of 1987⁷ demonstrated marked reductions in all age groups and throughout all regions in the prevalence of and severity of the disease reported by a further survey 10 years earlier.⁸ The proportion of five-year-olds in England and Wales with known decay extent, rose decreased from 70% in 1973 to 48% in 1983. The number of teeth with known decay extent (cavities filled or material bands) had decreased from 3.4 teeth in 1973 to 1.7 teeth in 1983. Men aged 16-17 years (a considerable fall was reported amongst 15-year-olds when the percentage of subjects with known decay extent fell from 57% to 43% and the

average number of teeth affected fell from 8.4 to 3.6—respectively over the same period, in that same survey. 50% of 15-year-olds were reported to have no known decayed teeth (3 or 42% with active decay and presumably no need of restorations). Preliminary results from a study of the restorative requirements of naval recruits indicates a fall in the mean number of teeth with decay exposure from 7.1 in 1980 to 3.4 in 1987.⁹

The causes of this decline are unclear. The sample factor has been identified as bringing about the widespread decline above. However factors considered to contribute to the decline include:

- (1) the increase in rates of fluoride toothpaste
- (2) the fall in sugar consumption
- (3) the improvement in public attitudes to dental health
- (4) the increase in uptake of dental services for children and the change in content of treatment provided; and
- (5) the role of water fluoridation (not restricted to less than 10% of the main UK population, and likely to decrease due to problems of conformity with the forthcoming development in the water industry).

However declines in the prevalence and severity of the disease may be offsetted by the effects of dental services. The placement of a filling, before decay exposure on a tooth, may differentiate an exposure between dentists as to when to place a filling may have a considerable effect not only upon the dental health of the individual but the confidence and expectations of epidemiological studies essential in the planning and provision of dental services.

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A dental examination seldom lasts longer than 15 minutes. In that short period up to 150 teeth surfaces must be examined for signs of caries or defects, considered the periodontal status measured for measures of the periodontal disease, the remaining soft tissues and some paraodontal areas examined for evidence of pathology, and radiographs and any laboratory tests interpreted. Time should also be allocated for consideration of medical and dental histories, dietary risk factors and other tasks towards prevention.

Five clear sub-problems exist in oral dental practitioners in the desire to treat or not to treat an early carious lesion or to replace its development, restoration. A decision is often its replacement implies a potential source of failure on the part of the dentist. Because of differing training, career experience and a lack of established criteria, such decisions may involve subjectivity and some variability. Small differences between dentists are to be expected and may be of only minor significance. Large differences will bring major implications for the dental health of individuals and the allocation of resources. Three scenarios that occur in dental treatment planning are seen: the medical practice and the making of University examination papers in fact, but two areas involving the subjectivity of the human disease-making process.

Many clinicians agree that the decline in the underlying disease has made the diagnosis and management of dental caries more difficult. Generally, lesions will progress slowly^{1,2,3,4} many will become inactive or even remineralized^{5,6,7,8,9} and 10-20 per cent remain ongoing within the Royal Naval Dental Service of unselected lesions which progress within several months throughout the course of the tooth even though there may be, other lesions in the same mouth which maintain stability. This specificity is a relatively new concept in dental caries and currently an ongoing trial tends to help the clinician, however, in order to overcome the limitations associated with clinical, epidemiological and radiographic measurements about the rate of dental diagnosis throughout the tertiary a study is currently in the planning stage to investigate the value of various biochemical and microbiological markers in this assessment to dental caries.

Methods of longitudinal data relating to untreated tooth caries, radiologic shifts in dental caries as well as caries-free tooth about by the treatment of various diagnosed teeth. In early

1987 a system of gathering clinical information was introduced in the Dental Department HMS Raleigh to enhance the evidence base of early caries status in the early radiologic planning, resources could be deployed to ensure that those targets on completion of training could be met. The information system involved each clinician's quarterly completion keeping a record of the numbers of lesions measured from each operator and the number of fillings required by each patient. Completion of this data eventually could yield information over and above that required initially for early planning the dental service needs. Such needs could be brought about by a shift in the underlying pattern of disease or by diagnosed carious lesions adjacent to lesions were some or indeed between dentists in dental offices are incorporated. The aim of this paper is to describe the comparison of the data collected from naval dentists who served HMS Raleigh from January 1983 to April 1985 and to discuss the possible causes for the reported changes in caries-free treatment needs with a view to future planning of the dental care of recruits.

METHODS

During the various health checks that a recruit undergoes on entry into the Royal Navy a full dental examination is carried out. The dental clinical data that involves a full clinical examination and the recording of all tooth present and the distribution of leaving (intact/unfilled) and full mouth (unfilled/restored) radiographs. On completion of this examination by a dental officer, further observations would complete assessment of the numbers of fillings required by those who required no fillings (0 fillings), one or two (one/two), two and more (two/five/fillings). The data collection sheet indicated the individual dental officer the work of entry and the classification of caries was made. Results and Analysis Approaches made after one locally the data sheets, were forwarded to the Director of Naval Medicine for further analysis.

Data Analysis and Statistical Method

Data, tabulations have been generated for:

1. the number of recruits seen by each clinician;
2. the average number of fillings required in a patient;
3. the percentage of recruits considered fit by each clinician.

Table 1. Summary Statistics by Period

Group Variable	PERIOD							
	1987			1988			1989	
	1	2	3	1	2	3	1	
MALES								
Age 18 yrs/total	1.24	1.03	1.06	0.97	1.08	1.45	1.08	
% 18	68	81	82	58	68	68	68	
% 18 yrs 0-1	10	7	8	7	13	16	17	
% 18+ referred	38	40	38	51	58	43	57	
Age referred	1.94	1.98	1.94	0.90	1.08	1.01	1.41	
FEMALES								
Age 18 yrs/total	0.60	0.43	0.54	0.47	0.40	0.57	0.55	
% 18	35	32	33	38	44	38	35	
% 18 yrs 0-1	2	3	3	3	3	8	5	
% 18+ referred	23	31	33	20	28	33	28	
Age referred	1.31	1.24	1.07	0.81	1.03	0.79	1.02	
ALL OTHER APPLICANTS*								
Age 18 yrs/total	---	0.51	0.47	0.40	1.08	0.38	0.68	
% 18	---	30	23	24	83	43	46	
% 18 yrs 0-1	---	3	4	4	7	3	7	
% 18+ referred	---	27	28	28	43	32	33	
Age referred	---	0.88	1.06	1.01	0.93	0.74	1.02	

*Data unavailable for period 1 of 1987

Table 2. An illustration of the variability encountered between CI scores. Data for Male Recruits in 1989

Clinical	Total Recruits Examined	Ave. 18 yrs required per referral	Fit on Entry %	Recruits requiring 4+ 18 yrs %	% Recruits referred to Dental Hospital
1	238	1.18	82	8.4	68
2	1482	1.21	80	8.8	48
3	533	1.08	87	9.1	24
4	1215	1.18	88	10.5	58
5	881	1.06	84	8.1	62
6	706	1.03	88	8.5	38
7	143	1.07	89	10.2	38
8	345	1.48	63	14.1	35
9	368	1.08	87	10.2	35
10	158	1.34	68	10.3	43
11	284	1.07	80	7.9	39
12	137	1.07	87	10.3	29
13	183	1.34	51	18.8	43
ALL	7788	1.24	81	10.7	39

Note: Clinical 13 is the age-range of the conscripts of age 18 in Dental Officers

- 4 the percentage of recruits requiring less or more fillings
- 5 the percentage of recruits referred to a Dental Hospital by each officer
- 6 the variability between clinicians for 1-4 above

For the variables referred to in items 1-5 above a model was first considered of the form $E(y_{ij}) = \mu + \alpha_i + \beta_j + \gamma_{ij}$

Where $E(y_{ij})$ is the 'expectation' of the variable y_{ij} , μ is a constant to be estimated, α_i and β_j are the effects of the clinician labelled i and the period labelled j respectively, γ_{ij} is the residual error term.

Weighted non-orthogonal analysis of variance (ANOVA) has been calculated to measure the significance of the clinician (dental officer) effects in the presence of period effects and the significance of period effects in the presence of clinician effects. The weights in the ANOVA correspond to the numbers of recruits seen by each clinician within the period.

RESULTS

Table 1 summarizes the dental data in terms of seven periods of 17 weeks from January 1967 to April 1969. It is readily apparent that:

1. males had the highest incidence (average fillings required) % requiring at least four fillings of permanent teeth

2. the indicated average fillings required, % requiring at least four fillings for males and Auxiliaries were lower during 1967 (periods 1 and 2) and 1968 (period 3) compared to later periods

3. the percentages (b) were highest during 1967 (periods 1 and 2) and 1968 (period 1) compared to later periods.

During the two years 1967-68 the changes in dentistry as a result of implementation of dental officers may have influenced these indications. Table 2 illustrates the variables considered in our analysis. Dental Officers in their own capacity of male officers (Classes 12) in the composition of the data for the three Royal Naval Reserve Officers (Community Dental Officers, University Locum and General Dental Practitioners). Differences amongst dentists were statistically evident for all variables. Percent levels ranged from 39% to 60% and the Dental Hospital referral rate ranged from 24% to 39%. There does not appear to be any relationship between these two indicators in clinician's prescribing preferences. In the presence of period effects differences in terms of

statements presented between dentists could be ascribed to the seven variables (% b, % D4 referral). The average filling rate ranged from 1.63 to 1.82 fillings required per person. Table 3 presents a summary of the dental treatments. All percentage data have been transformed by angular transformation. Allowing for possible dentists effects there were significant differences between periods for some indicators.

Average fillings required per recruit (males)

% b (males and Auxiliaries)

% requiring at least four fillings (males)

% Dental Hospital referral (males)

Table 4 illustrates the changes in patients in dental indications over the two year period. Negative values indicate lower values in the periods considered relative to the most recent period (1969). Generally for males the indication was similar during the three periods, 1967 (periods 1 and 2) and 1968 (period 1) and lower in terms of treatments required than for male recruit periods. Rates of referral to Dental Hospitals for the male recruits have increased during the two years.

The numbers of fillings required for females and Auxiliaries were much lower than males. At the same numbers in these two groups were less than 12% of the male total so accurate statements of changes in patients is made.

DISCUSSION

The analysis of the data has demonstrated that the treatment need of naval recruits has varied over the period studied in particular the numbers of fillings required by all groups have increased while levels of apparent tooth decay have declined. A marked difference exists in the treatment needs of the three sub-groups of recruits. The females (Women and Naval Nurses) and Auxiliary Apprentices (all males) demonstrate higher levels of illness (tooth filling rate) and lower numbers requiring four or more fillings than do males. The recruits referred to dental hospitals as tooth aches, over oral disease in general health and dental health behaviour and health care of occlusal and retentive treatment. Although data occurred in all groups it is possible that the worse numbers for females and Auxiliary Apprentices approximate to the best numbers for males over the same periods.

The reasons for all these changes are unclear. However the authors hold the opinion that the sharp increase in the average filling rates for males with the corresponding reduction in the number of recruits in occlusal which

Table 2. Significant factors assessed in the ANOVAs of Data Relating to Clinician and Period

Group/Variable	SIGNIFICANCE LEVEL (%)		
	Clinician in presence of period	Period in presence of clinician	Both Clinician and period
MALE			
Average fill	—	1	1
% fill	8	8	1
% fillings 4+	—	8	8
% OH infested	1	8	1
FEMALE			
Average fill	—	—	—
% fill	8	—	8
% fillings 4+	—	—	—
% OH infested	8	—	8
ARTICLE APPRENTICES			
Average fill	—	—	—
% fill	8	8	8
% fillings 4+	—	—	—
% OH infested	8	—	8

Note: All % indications are on an angular transformation basis.

Table 3. Period Effects in the presence of Clinician Effects Relative to Period Effects for 1967 (1st Period)

	1967			1989		
	1	2	3	1	2	3
MALE						
Average fill/infested	-0.43	-0.55	-0.81	-0.58	-0.34	-0.36
% fill	3	7	7	8	5	4
% fillings 4+	-8	-4	-7	-1	-3	-3
% OH infested	-14	-8	-7	-8	-8	-1
FEMALE						
Average fill/infested	-0.18	-0.32	-0.21	-0.18	-0.25	-0.03
% fill	-2	1	-1	-3	0	3
% fillings 4+	-5	-8	-4	-6	-5	1
% OH infested	8	10	2	10	-1	3
ARTICLE APPRENTICES						
Average fill/infested	-0.42	-0.37	-0.32	-0.23	-0.18	-0.18
% fill	8	10	8	8	-8	3
% fillings 4+	-12	-8	-7	-1	-1	-8
% OH infested	-8	-7	-7	-3	-3	-3

Note: (1) All values for % indications are on an angular transformation basis.

(2) No Article Apprentices in period 1 of 1967.

remained at the start of period 2 in 1983 and maintained themselves at a succeeding period, raised the idea to changes in the statistical status of women leaving the Service. Over the two year period there would have to have occurred a major shift in the incidence of dental cases throughout the United Kingdom 14-16 year old population or such a change in recruiting policy which altered the usual risk demographic variables associated with dental disease. No such evidence in support of these possibilities has yet been put forward.

The changes in 1983 brought in a disquiet, raised in their the majority of reports remain under their care for less than two months after which the records progress their treatment at other dental institutions under the care of other clinicians. Should these clinicians be in a position to re-examine the records it would be normal for the differences of opinion to come more to notice than in situations that the benefit of knowledge. Feedback of such information either directly between clinicians or indirectly through management could serve a positive function in the final business decision making process of diagnosis and treatment planning which may account for the changes in trend reported. Such studies and their outcomes can have major consequences for the patient, the clinician and the government of dental care.

Whilst the reasons for the reported changes remain speculative upon the short term data available it is clear that clinicians are required to have a greater understanding and awareness in the short period of the past for which information is available. In manpower terms the shift from early 1983 to early 1985 in filings required for dental services places responsibility on one full time dental officer plus one extra secretary and support staff at RMH. Another possible explanation for the manpower planning comes through the loss and life of filings: the 80% survival time of which is reported to be less than 5 years¹². Increased rates of filings during war years (raising well over 100 in an increased need, amongst them a 4000 over five years later

is noted). The results of this study underline the confusion and need for the current planned arrangements with the effectiveness of dental repair and neurobiological markers as predictors of dental cases which may ultimately bring about greater objectivity in diagnosis and treatment planning.

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CONCLUSIONS

Against a background of falling dental cases levels, especially amongst children and young adults in the United Kingdom there has been a marked increase in the extensive treatment needs of dental patients since 1981 (1983). It is doubted that the usual variables determining the dental health of this age group could have failed to work as well as to explain the increase

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AN HISTORICAL SNIPPET

The London and Windsor Gold Medal

In the end of the 1710-18 there about 25,000 dental officers remained in the Service to serve the soldiers of the new Great Britain and a further four were recruited before 1720. In 1702 some members of the new Great Britain were killed while one company of 40 men is remembered who had quitted after the end of the war.

In 1713, a competitive examination, the London and Windsor Examination, was held to fill a further seven vacancies. In this examination R W Pashley was awarded the Gold Medal, one medal being awarded to the recipient obtaining the highest marks provided he obtained at least 190. In 1714 the London and Windsor examinations provided four more dental officers, the Gold Medal being awarded to R. P. Longbottom. Most were appointed between 1715 and 1719, but in early 1719 the examinations were held again and several vacancies were filled with W L Brigham, winning the Gold Medal. Later that year another examination was held and four more dental officers were appointed, but the following candidates did not achieve a sufficiently high mark for the Gold Medal to be awarded. The last competition was held in 1720 when three more vacancies had to be filled. Two appointments were filled with W Hilday winning the Gold Medal on this occasion. Margate was named (Dr Hilday wrote, "I remember the examinations were well copied, a token for the fact of City's Hospital for Nervous Disorders and Hilday's Medal was the maximum. I had passed my L.D.S. three months previously and I thought the examination

for merit leading from before that my health. There were three written papers and twenty-five were asked questions of "hands on" operative dentistry and a whole day of practical demonstration was held on complete dentures in the day."

The Medal itself weighed four ounces and was worth as the Royal Mint in 20 most gold. It cost the laboratory £10.00 in the 1720s when estimated at one and a half guineas per piece. As the Admiral Hilday writes, "I always told the youngsters though that should I die, I should leave the medal which would keep the wolf from the door and I should enter my obituary."

Surgeons of the Gold Medal were distinguished by the words 90 holes stars that of surgeons in the Navy List between 1703 and 1705. Throughout the nineteenth century in the Navy List that was changed to 1780, after the year when it first began, marking those of the surgeons who had served in the 1700s popular in the Navy List in the order of merit in the London and Windsor Examination. In 1840 the Gold Medal was in place first and the other medals of the order already are not in alphabetical order.

Of the few Gold Medal winners mentioned above all were presented to Surgeon Captain (Dr) and now W Hilday, Surgeon General in the rank of Surgeon Rear Admiral (Dr) 1850-61 and now Chief Dental Officer, Department of Health and Social Security 1981-92.



The College of Anaesthetists

S B Merril

On Wednesday, 19 October 1988, the Board of the Faculty of Anaesthetists of the Royal College of Surgeons of England met for the first time. Then, in the person of our Chairman of the Faculty Sir Robert Macintosh and other distinguished guests, the Faculty occupied the role of College of Anaesthetists with Professor Michael Norman as President and Professor Alanar Norman as Vice President. The President of the Royal College of Surgeons, Sir Ian Stevenson, Lord, attended the going in to establish the birth of the new College and on receiving Professor Norman, he said to the birth of the new College and wished the College every success for the future.

So finally the anaesthesia community has achieved the major aims of unity, independence and financial independence. There remains one further step to achieve—the acquisition of the Royal title on which there is no legal bar. The Council are pursuing this aim but progress will be slow.

The Council of the College of Anaesthetists remains within the building of the Royal College of Surgeons in Lincoln's Inn Fields, but is completely detached in effect the anaesthetists now have a college within a college. This new form of college is unique; it was made possible by agreement made in 1955 by the Council of the Royal College of Surgeons of England (RCS) and the new arrangement makes an alteration to the rules of membership of the Council of the RCHS. These rules, provision for those now in the Council with full

voting rights and therefore, *Præsentia* is to the posts of Vice President and President of the RCHS. The new form of College will be under scrutiny by many other specialists who have college issues. Such innovation is fully in the tradition of the association, *præsentia*.

The evolution of the anaesthesia union of the anaesthetists specially began in 1955 when an anaesthetist society was formed within the Royal Society of Medicine (RSM). From this beginning the Association of Anaesthetists of Great Britain and Ireland (AAGBI) was formed in 1957. The AAGBI covered our first steps which were then outside the Church of the RSM. The Diploma of Anaesthesia (DA) was one of these. The AAGBI members and asked the vote to that day. It is reasonable for producing the monthly journal *Anaesthesia*. Regular members are both at their best—*Anaesthesia*, a British Journal, which was produced in 1955.

In time, progress gave rise to the establishment of a more working body, namely the Association. Since creation of the Association, the Council, about the future development of the specialty, approached the President and Council of the Royal College of Surgeons of England, and as a result of the meeting, the Faculty was founded in 1961 as an independent, scientific and research organization with the objective to advance the science and art of anaesthesia. Since its inception the Faculty of Anaesthetists has been fully associated with the Royal College of Surgeons and is fortunate in having a full share of the benefits. It represents all the the Faculty and now the College contribute to the meeting time and membership of the members of the RCHS.

The development of the anaesthesia foundation of anaesthetists in its present day colleagues

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series has been accompanied by the necessity for increasingly sophisticated and searching post graduate examinations. The first Diploma in Anaesthetics was held in 1933 under the auspices of the Association of Anaesthetists. Following the formation of the Faculty in 1944 the first Primary and Final Fellowship examinations were held in 1950. In the same year the Faculty began their mission and recognition of hospitals for training for the examinations.

The three part Fellowship examination was phased in during 1945 and 1958 and is unique to the anaesthetist specialty. In effect the 244 examinations was considered for all anaesthetists. Prior to this time the Fellowship examination had required the successful candidate the DSA of the candidate was a career examination. Part 1 (PACAR) (now PCAR) was held in the old RMA with some minor alterations and is essentially a test of basic practical anaesthesia. Successful candidates are entitled to use the title DABR. Part 2 is equivalent to the obligatory examination and represents a test of the candidate's knowledge of physiological physiology and anaesthesia. Part 3 is the final examination for the Diploma.

With effect from January 1969 the Diploma of Fellowship granted by the College of Anaesthetists will become the Fellowship of the College of Anaesthetists. The abbreviated form will be PCAR. Four Fellows will be granted to use this style daily. Fellows with the Fellowship status from 1964 or earlier have a choice of either using the new Diploma title or continuing to use the FFARCS (RMA) title. On the discontinuation of the Royal title, one of two styles, FRCA or FRACR, will be chosen. There are still some tasks to be completed. Work is in hand to design a coat of arms and a motto for the new College.

There are changing times in the world of anaesthesia, both in the clinical field as well as the academic base of our specialty. Our husband and Ily years may seem a long time to have taken so much of age. Anaesthesia is however a strong constant specialty which has begun its evolution in the United Kingdom. There are about 1500 Consultants and on all a total of 1800 Fellows in the field of anaesthesia. It is therefore appropriate that we should at last reach collegial status.

R. was sub. 10 October 1968 in the Manchester

was General Hospital that a surgeon Dr Warren was among the first successful public general anaesthetists by Dr Monroe. Indeed in the anaesthetist's company. Confidence in the training. Since then all major advances in anaesthesia have been recognized by similar progress in the respect field. The initial surgical advances that occurred when it became possible to render a patient temporarily unconscious were enormous. Towards the end of World War I, Rutherford and Magill pioneered endotracheal intubation at bedside enabling for World Wars to make great advances in the field of head and neck trauma surgery. In the 1940s the introduction of muscle relaxants made life considerably easier for the anaesthetist and also made surgery. Many recently the use of a non-inflamed organization have made cardiac surgery almost routine. Today anaesthetists, with respect and great ingenuity have been continued to improve surgical results particularly in the neck and thorax. It is therefore all the more appropriate that our new College should remain fully integrated with the College of our surgical colleagues and remain housed in the same building.

Surgery and anaesthesia daily documents in the operating theatre and outwards meet and their abilities to form close and harmonious partnerships for the benefit of their patients. We can be very confident, therefore, that our expectations are based upon a history of successful relationships. This example will be followed by at least as long as we ensure that the whole system can function as smoothly as the sum of each of the parts.¹

Acknowledgements

The author would like to thank Professor Michael Rosen, the President of the College of Anaesthetists, Dr Richard Robinson, a member of the Council of the College and past Vice-Chair of the Faculty, and Dr John MacKay, the Secretary of the College, for their help in the preparation of this article.

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Experiences with Ureteroscopy

T. J. W. Spalding

Abstract

Thirty-nine patients underwent 44 ureteroscopes per urethra between January 1988 and August 1991 for diagnostic and therapeutic purposes. Twenty-six procedures were undertaken on 33 patients for treatment of stones, which all were successful on the initial attempt at 1.6 (94%). Four stones not removed on the first attempt were however done percutaneous and ureteroscopically, passed spontaneously, and three more were removed in a second ureteroscopy. The overall success rate was 94% (44/47). Only two patients required conversion to open.

Ureteroscopy using relatively a flexible, an effective technique, with minimal morbidity and almost total absence of conversion to open, is a safe medical device.

INTRODUCTION

The introduction of safe rigid transurethral endoscopy into urological endoscopy has for long time already has revolutionized the management of urologic disorders. Both diagnostic and therapeutic procedures are possible with minimal morbidity, morbidity, and duration of hospitalization.¹⁻³

The management of urologic stones forms a significant proportion of urologic endoscopy. Any procedure which allows the removal of impaction or reduces demands on urological resources and extends the patient safely, to high urologic medical device, has obvious advantages.

Ureteroscopy was introduced into urological practice at the Royal Naval Hospital, Haslemere in January 1982 for diagnostic and therapeutic use.

PATIENTS AND METHODS

Thirty-nine patients, 28 males and 11 females, underwent a total of 44 ureteroscopy, per urethra. The age range was 19 to 64 years (mean 45). Nineteen were female patients, using Royal Free Gynaecology Centre and 25 were urologic.

All patients had a rigid ureteroscopy under general anesthesia prior to dilation of the urethra under sedation under short-acting. The dilation was performed initially by balloon but more recently using short guided metal dilator to 12F using a guide wire when necessary (Fig. 1). A 16F or 18F rigid ureteroscopy (Fig. 2) was used in all cases and each procedure was completed within 30 minutes of the patient dilation.



Fig. 1. Ureteroscope in the 12F position.

Fourteen patients underwent ureteroscopy for diagnostic purposes (Table A). Twenty-six

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Fig. 1. Laryngoscope (L3 P) and L3 P+.

had transnasal left arytenoids of the upper airway tract, one a squamous and radiological suspicion of adenocarcinoma, probably related to the passage of a previous scope and one followed spontaneous passage, in situ, where radiological examination listed procedure was plain clearance. One procedure was performed to exclude the possibility of a second scope on the lower table of a patient with a large calculus impacted on the upper third of the vocal cord prior to planned bilateral neckbone laryngectomy (ESWL).

Table 1. Diagnostic indications for laryngeal scope.

Carcinoma of vocal cord	1
Carcinoma of airway	1
Megacystitis	1
Obstruction upper airway	1
Suspense stone	6
Possible airway stone	1
Total	11

Twenty five patients underwent laryngoscopy for diagnostic purposes (Table 1). In one patient an upper third stone was manipulated in the vocal folds prior to clearance (ESWL). In another a biopsy was taken of the middle third of the airway with larynx cleared on three occasions over a three month period.

The remaining 14 patients had various indications including 4 boys (aged 7-10) who had an expanded vocal cord with lower 14 lesions (for ESWL) for a vocal stone. The stones varied in size from 2 to 10 mm (mean 7) and were situated on the lower third of the airway in 10 cases, at the middle/lower third position in two and on the middle third in two.

Table 2. Therapeutic and outcome for laryngeal scope.

Manipulation group (L3 P+)	1
Clearance of calculus (laryngeal scope)	12
Clearance of stone/stone	1
Total	14

Stones removed were manipulated under direct vision using either a Bard 4 wire stone hook or Bard 3 wire 'jumping' forceps (Fig. 3).



Fig. 2. Transnasalrod with Bard 4 wire grasping forceps.

RESULTS

Of the 15 primary laryngoscopy procedures undertaken to remove various stones 14 (93%) were successful including clearance of the vocal cord¹¹ (Table 1). Laryngoscopy was repeated in three cases (6, 12 and 14) (all clear) and the stone successfully removed on the second occasion in every case. Four stones disappeared on the first attempt but not removed subsequently passed spontaneously, with no requirement for further intervention. Only two patients (16) required further laryngoscopy. Open surgery was therefore avoided in 21 procedures of a potential 23 representing an overall success rate for the procedure of 91%.

Twenty two patients left hospital on the day following laryngoscopy but one required a temporary percutaneous tracheostomy and remained in hospital for 13 days.

The mean period of medical down grading

Table 2 Results for entire interval

	Patients	%
Returned for surgery (CR)	14	41
Healed spontaneously	4	11
Had repeat endosteal (SE)	2	5
Amputation	2	5
	total	23

*Includes, still alive

for the ten Service patients who underwent arthroscopic canal resection less than 12 months (range 0-5). Five patients, however, compared 12 treatments for treatment period and only two patients were close-ended for all days. One was a patient who developed a temporary severe aseptic jointitis (PJI) observation and the other had been instrumented from a foreign source.

COMPLICATIONS

One procedure was undertaken for aseptic chronic canal drainage in a 64-year-old female with an implanted valve on the lower third of the left tibia and another performed at the right tibia after valve resectioning its revision. The dead on the left postoperative day of canal infection.

One Serviceman developed synovial knee pain and fever on the first postoperative day related to an acute hydroarthrosis secondary pyroarthrosis explaining for seven days. Arthroscopic arthroscopy showed no infection, but infection, again, at the lower tibia joint, which resolved spontaneously. Postoperative arthroscopy has revealed no evidence of other joint infection.

No perforation or late infection has been seen to date.

DISCUSSION

This series demonstrates how the technique of arthroscopy can allow arthroscopic arthroscopy of aseptic joint infection. Data by relying on radiology alone had low accuracy, invasive procedures can often be substituted for results which in the past demanded major surgery.

The greatest impact of the procedure has been seen in the arthroscopic management of aseptic infection in 1994 the year before this study, namely four patients underwent arthroscopic or total hip joint (THJ) joint, correction for aseptic infection with the arthroscopic

mineral infection. Since the introduction of arthroscopic joint arthroscopy, the use of open surgery to arthroscopic infection has reversed with a consequent decrease in the periods of hospitalization and convalescence.

The evidence to support a aseptic joint in the first interval should not be regarded as a failure of endoscopic management to avoid debridement may just spontaneously. It has been the policy to abandon arthroscopic attempts early on the assumption that late infection may occur when a delayed secondary procedure is undertaken. When cases have not been observed in the first attempts the second procedure has been successful on each occasion with rare exceptions and no complications.

The technique of arthroscopic canal resection has been reported as joint arthroscopy, with arthroscopy lasting up to 90 minutes,¹² but has not been the finding in this series.

Experience has confirmed the impact of others¹³⁻¹⁵ that arthroscopic canal arthroscopy is safe with no apparent long-term complications. When performed for the removal of aseptic infection it is a safe and effective and low expense method available allowing return to high intensity medical fitness at the least time.

Acknowledgments

I wish to thank Surgeon Captain J. L. Arthurs Royal Navy for permission to report his patients.

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A comparison of Self Recording Audiometry in Naval Establishments and Clinical Audiometry in a Hospital setting

M. C. Frempton and R. T. Counter

Abstract

Following the introduction of self-recording audiometry into general use in the largest Royal Naval medical facilities, three test runs in duplicate in the case of detection of hearing loss and comparison against the formal audiometry and ENT examination in Naval Hospitals. Performance of self-recording test runs compared and the hearing thresholds obtained by the two methods compared. The value of self-recording audiometry even in the short completed, satisfactory results recorded in a Naval unit has been produced and the method of its use has established as a reliable indicator of the hearing threshold.

INTRODUCTION

The damaging effects of loud noise have been recognized for many years but it is only relatively recently that action steps have been taken to quantify the hazard and respond to noise. Noise exposure. With the advent of hearing conservation programmes as evidence that the Armed Forces is faced has grown to collect large numbers of audiograms quickly and efficiently. Quite clearly standard clinical pure tone audiometry is too labour intensive for this type of work and it is generally accepted that a self-recording technique will produce satisfactory results provided that strict criteria are followed for the conduct of the test.^{1,2}

In clinical audiometry a highly trained test

person presents tones of different frequencies to the subject who indicates whether he can or cannot hear by pressing a button inside. The standards of hearing at each frequency and for each ear is judged with great precision as a result of the subject's response (the marked of hearing). A chart of hearing loss is produced indicating the threshold for each ear frequency as such per (Fig. 1).

In self-recording audiometry (the method of diagnosis) the response to the earphone is direct by the subject's response which is then pressing on the button results in a notation on the sound level scale as threshold; the subject releases the button and the sound level is both increased and the subject must again respond. This process is repeated for each frequency in turn (which is why this is often called 'staircase audiometry') and the test is over with the results displayed as a series of 'log' log lines on the chart (Fig. 2). The chief advantages of this technique are speed and the fact that a fully trained audiometrist is not needed to obtain the audiogram. As the Establishment will buy a medical standard is particularly capable of setting up the machine and up to 10 audiograms can be obtained with total Control technique is very important and the reader is referred to the Health and Safety Executive Document (Document—Audiometry in Industry (HSE)) in which detailed instructions are given for the position of audiometry in an industrial setting. The following are general test concepts of error.

1. Calibration and usage/operation. Control measurements and particularly the regular test

Major General, Surgeon to 1 Command in ENT and is stationed in Royal Naval Hospital, Haslemere, Surrey. Consultant Director in Otorhinolaryngology in ENT in Medical Director General (HSE)



Fig. 1. An example of a Peak Time Histogram

bottom of the audiometer by experiment. The headphones should be adjusted for each patient so as to give a comfortable and accurate fit.

3. *Temporary threshold shift* It is very important that the subjects under test have not been exposed to loud noise for a minimum of 14 hours because hearing thresholds may have been elevated as a result (Temporary threshold shift).¹

4. *Audition sound levels* The audiometer should be situated in a quiet room and the use of headphones over the headphones is recommended. In some establishments an acoustically treated booth is used but this does not eliminate the need to measure ambient noise.

5. *Instructions to the subject* Although observation has to be maintained on the self-recording audiometer, the way in which the subject is instructed may be a primary source of error. The subject must be given a standard set of instructions by the supervising medical standard or nurse and these instructions are usually in printed on a printed card displayed near to the audiometer. It is of crucial importance that the subject understands that he is to press the button when he hears the tone and should release it when it disappears. In one study carried out in the USA by Corso² the subjects were checked to keep the sound gun firmly against the ear when a hearing test commenced, that the concept of hearing a threshold was beyond the intellectual grasp of many industrial work-

ers. Subsequent research^{1,3} has generally confirmed that this instruction results in seriously raised thresholds.

6. *Criteria for exposure to audiograms* For a Group audiogram to be considered reliable at least six reversals are required at each frequency that describes the flat region. The peaks and valleys should not deviate by more than 10 dB rising decibels in. If an audiogram does not fulfill these requirements it should be repeated. First-time experiments in industry suggest that with self-recording techniques the reliability is about twice that with clinical audiometry.⁴ Conversely in a laboratory study the standard deviations of the pure tone thresholds were lower than found using a self-recording audiometer.⁵



Fig. 2. Group audiogram from test, Figure 1

In the Royal Navy, a hearing conservation programme has been in progress for the past 10 years and since Naval Establishments and Recruiting Officers are now equipped with self-recording audiometers. The shape of the curve obtained from the hearing at every instant, not only to confirm the figure to serve that also to obtain a time-lapse audiogram for the records. Subsequent audiometry is conducted in water FULFILLING this aim, but it is usually carried out more frequently. Particular attention should be paid to personnel who are exposed to loud noise in the course of their work to detect minor degrees of hearing damage and to detect early. Regular audiometry is equally important in situations in which particularly severe hearing is required in order to maintain operational effectiveness.

In this study a random selection of audiograms collected at various Naval Establish-

ments using self-recording equipment was compared with results obtained from the same patients using clinical auscultation as the reference standard: of the ENT department at RSH Hospital. The objective was to evaluate the sensitivity and specificity of self-recording auscultation as a hearing conservation requirement and to confirm that the method of ambulatory averaging of the high and low peaks is a valid way of establishing the threshold limit for persons operating on the coast. Self-recording and clinical auscultation have both responded in a satisfactory way to many previous studies.^{4,12} We have here had the opportunity to compare the two techniques in a real world, separate where conditions are often less than ideal.

MATERIALS AND METHODS

The patients chosen for the Royal Navy for the Hearing Conservation Programme at the Green Studes 1700 B. Two machine problems

in 7 frequency sweeps with a protocol as continuous noise presentation. In this study the peak tone model was used. The tonalities were fixed with auscultation and a many years on auscultatory basis was used for additional auscultation of ambient noise. The testing technique described in the discussion document¹³ was used.

Forty-two Naval personnel, who had had Group audiograms at their Enlistment were here and were subsequently referred to the ENT department at RSH Hospital, were the subject of this study. When referred were for otological examination after a finding of a hearing loss, but many patients were referred with standard ENT pathology. In the clinical setting a Green Studes 1700 B. audiometer was used and individual thresholds at the seven 7 frequency were established using the method described by Pughson and Morlock.¹⁴ Even at the start of patients with a variety of hearing loss, audiograms from both ears were selected

Table 1. Chart for recording Audubons Data (for example prepared from Figures 1 and 2) (figs. 6a)

Mile	P (dB)	Sweeps—Last 4 Cycles (Endurance starting with Peak) (dB)							
		1	2	3	4	5	6	7	8
0.5	8	-10	-5	-5	-5	-5	-5	-5	-5
1	5	-5	0	-5	0	-2	4	-1	5
2	0	-5	-3	-4	-3	-5	0	-4	0
3	0	-7	0	-5	0	-4	0	-5	0
4	10	0	0	3	0	0	3	-1	0
5	5	-4	0	-5	0	-5	0	-10	0
6	5	-10	0	-5	-3	-10	1		

Table 2. Percentage of Thresholds obtained by Self-Recording Audubons using either 10, 15 and 20 dB of Pure Tone Threshold

Mile	Percentage		
	Within 10 dB	Within 15 dB	Within 20 dB
0.5	75	90	95
1	75	95	95
2	80	90	95
3	75	95	95
4	75	90	95
5	57	70	80
6	75	90	95

He ate pathology was unrelated and while most of the hearing loss was presumed to be sensorineural, there were occasional losses from other causes and cases of middle ear disease. This policy was deliberate because it was felt that by narrowing the spectrum of patients entering the study, as well as an assessment of self-reporting asymmetry in the real world, would be reduced it was assumed that the asymmetry derived not in the clinical setting was the more relevant one, although it is accepted that as with any subjective assessment there are doubts of what even under optimal conditions. The pen recording from the C90 1703 B and the clinical audiogram were then compared and data extracted and normally related (Table 3). For each ear and for each frequency the threshold obtained by pure tone clinical audiometry (PT) was followed by the peaks (P) and valleys (V) from the C90 1703 pen recording. The peaks and valleys were related starting with the best normal and including a maximum of 5 reversals. The first reversal of the recording was ignored.

Averages of the peaks (P), P2 and valleys (V), V1 were calculated for each frequency. These averages were subtracted from the clinical pure tone threshold and the discrepancy

$$P = \frac{(P_1 + P_2) - (V_1 + V_2)}{2}$$

calculated as a measure of the range of observed self-reported thresholds around the clinical pure tone threshold for each frequency.

RESULTS

The results are displayed in Figs 3 and 4. The discrepancy, in dB between the pure tone threshold (Pt) and the thresholds derived from the Tinnitus audiogram is shown as a histogram.

The percentage of thresholds obtained by self-reporting moderately lying within 10, 15 and 20 dB of the pure tone threshold are shown in Table 3.

CONCLUSION

In a laboratory setting self-reporting asymmetry has previously been shown to produce consistently lower (or better) thresholds than standard pure tone techniques.^{10, 11}

Figs 3 and 4 show that this was the case in our



Fig. 3 Discrepancy (dB) between Tinnitus Audiometry and the Pure Tone Threshold (Pt) at 0.5, 1, 2 and 3 kHz.



Fig. 4 Discrepancy (dB) between Tinnitus Audiometry and the Pure Tone Threshold (Pt) at 0.5, 1 and 2 kHz.

study with a definite tendency for the threshold obtained by Tinnitus audiometry to be better (more sensitive) than the pure tone threshold.

Cox¹² reported worse thresholds at the lower of 100 psychology students (as it is commonly relevant that he recruited two subjects to keep the same post handy available in all cases). Clearly the instructions given to the subjects and the individual's interpretation of these are of crucial importance. Equally important is the point on the pen recording which is taken as the threshold. Cox¹² took the peak but the real point is more almost universally regarded as the threshold.^{13, 14} Our results confirm that this is approximately correct. There are also differences in the way in which the real point is related, using the simple (or average, say¹⁵) to taking the arithmetic mean of the averages of the peaks and valleys.^{14, 16} The magnitude of the subject's is similar factor which has been studied and in Cox's study¹² the performance of hourly paid, to

generally workers was compared with that of industrial office staff. All 17 of the audiograms reported as being readable came from the hourly paid group. It found that a number of compensation claims for noise-induced hearing loss were in progress in that group. It concluded that deleterious effects had been made to identify the results in order to stimulate the reported hearing loss. In the Royal Navy, self-recording hearing loss is relatively uncommon, possibly because compensation claims are not actually lodged until after personnel have left the Service. However, it found a number of problems with self-recording audiometry in industry and in addition to possible misreporting comes about factors such as poor co-ordination between ear and hand when operating the equipment, broken live mechanisms and the effects of changed ear shape. In contrast, Deffen and White¹⁰ found that children aged 4 or more could with proper instruction provide a reliable audiogram from a self-recording machine.

Most of the Navy audiograms in our series was reported and it was our impression that the sailors who were our subjects were well educated and intelligent.

In our study some shortcomings of items that 20 dB were observed, mostly in the higher frequencies. These results indicate fairly, each point on the person or operator's part and mechanisms of the type are accepted factors of industrial audiometry.¹¹⁻¹²

Our findings support the view that self-recording audiometry is a satisfactory technique for the 'real world' industrial audiometry setting. For the Royal Naval Medical Officer serving in a Naval Establishment in Ship, the mid-point of a self-recording from a self-recording audiometer may be taken as the likely threshold with an acceptable degree of accuracy. Hearing aids, however, can then be calculated and a valid comparison made with previous audiograms filed in the patients' notes. The aim of the Hearing Conservation Programme is to detect minor degrees of hearing change at an early stage and to prevent further hearing losses in cases that there is no deterioration. In the single Deffen¹⁰ program, there is significant threshold shift (HTS) should be defined as a 10 dB or greater change for the worse for either the 500 to 2 kHz pure tone average or the 3 to 4 kHz pure tone average or either ear. If an HTS is suspected and confirmed on repeat audiometry, a threshold shift as previously defined for HVT operators. Quite clearly, there will be instances of successful threshold shift proving to be spurious

on clinical testing, but it has supported the necessary relevance of this sort of test.

CONCLUSION

This study confirms that self-recording audiometry is a reliable and easy to use technique in the 'real world' setting of the Naval Industrial setting but has provided that the test is conducted according to strict criteria. It allows large numbers of audiograms to be collected quickly by trained mechanics with little training as audiometers that produce results which are valid. The statistical nature of the gains and values of the hearing can be taken to be the threshold level.

Acknowledgements

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ABSTRACTS

The Editor invites all active members of the Royal Naval Medical Service who maintain a specialist expertise in medical and nursing subjects, to take advantage of the opportunity to draw their work into the attention of medical colleagues, with the prospect of its full appropriate abstract being forwarded for inclusion in the Journal of the Royal Naval Medical Service.

Clinical Management Update: Asthma

W M Edmondstone

INTRODUCTION

The prevalence of asthma in the United Kingdom is estimated to be around 2% although up to 50% of families who are asthmatic. In the Royal Navy the prevalence is probably less than 1% and only about 200 asthmatics require specialist supervision. Nevertheless the implications of asthma on Naval personnel are far-reaching and differ significantly from the civilian situation. The aim of this article is to review current ideas about asthma and its management and to consider the condition from the Naval perspective.

MANAGEMENT

Satisfactory management of asthmatic children, in two aspects, each of which will be discussed in turn: recognition, assessment, treatment, education and supervision.

Recognition

Classical symptoms identifying parents as problem in diagnosis. Difficulties arise when the symptoms pattern is less typical. Persistent dry cough, for example, particularly at night and often after upper respiratory infection, frequently occurs in the absence of other hall marks of asthma. In childhood wheezing after colds may be mislabeled "bronchitis" while bronchitis in middle aged adults may be called chronic obstructive airways disease and appropriate treatment withheld.

Recognition is important. Studies of death from asthma have shown that over 10% of

cases were misdiagnosed and consequently not treated.^{1,2} A diagnosis of asthma was given to only 14 of 81 children who had had more than four episodes of wheezing a year in a study from Newcastle.³ In some cases the diagnosis was not considered when others "bronchitis" was substituted because of the signs associated with asthma. In 1940 100 cases were discharged from service in HMS Humber under the 14 day rule because of asthma. It had a history of spells wheezing at childhood but had never been told they had asthma and so were not in a position to decide on a thorough medical examination. Subsequently "wheezing" was included in the J Ward 1 questionnaire with the result that in 1960 only three cases were discharged from HMS Humber because of asthma.

If the diagnosis is too clear from the history some simple physiological tests will usually help. Of these serial recordings of Peak Expiratory Flow Rate (PEFR) are particularly useful. Parents are supplied with a Wright mass peak flow meter and instructed to record the best of three successive blows each morning and evening over a two week period. Diurnal and dry to dry variation of PEFR exceeding 10% indicates asthma. This technique is also helpful if the history suggests this diagnosis but a particular sign or combination provides evidence, for example when unprovoked asthma is suspected. Challenge testing also aids the process. However challenge test events in 10% but in PEFR in 10% of asthmatics. We use a Serial Inhalant test and reserve any challenges till in PEFR and PEV, with subsequent Self-reported. Provided that the various challenges were done in 10 min the peak was above 160 bar more than 3 minutes there is no reason why a similar test

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cannot be carried out in general practice in the older patient, where an infirmity accompanied in being might obscure a background of chronic airways obstruction. Challenges tests may be inappropriate in the operation of a respiratory test, is performed in which PEV, PFC and PEPS are repeated before and an interval after initiation of inhaled salbutamol, followed by hyperventilation. Sometimes there will be no signal, most cases is used in these patients with the test is repeated after a two week course of Prednisolone, and patients should not be described as having "irreversible chronic airways obstruction" until they have had a second trial.

There has recently been considerable interest in challenge tests using histamine or methacholine. These tests are quick, safe and effective² and of need in conjunction with exercise challenge are likely to diagnose virtually all asthma. No Histamine challenge is now available in RMH Harlow and a useful for example in the assessment of potential recruits with a past history of asthma. Other tests for the technique will be described later.

Other investigations such as chest radiograph, sputum and blood counts, pulmonary function tests and BACT tests for bacterial diagnosis need to be kept out of general use. Allergic asthma remains an elusive disease from the history and if there are not three positive skin tests are rarely confirmed. About 30-40% of the asymptomatic population give positive test, and responses in sensitive allergens. Partly because of failing demand and partly because of increasing resistance to low doses of inhaled corticosteroids, it has been found that the use of these drugs has now ceased.

Assessment

At the initial interview of an asthmatic recruit care is taken to assess disease duration, the severity, severity and pattern of attacks, personal risk factors (Table 1), response to treatment, presence of associated symptoms, smoking history and past or family history of cancer. The patient's understanding of asthma is ascertained as his knowledge of the drugs and how they work, the clinical challenge is observed and simple questionnaire values recorded. With the information gained it should be possible to allocate the asthmatic to one of the following categories:

1. Mild infrequent attacks
2. Mild frequent attacks
3. Attacks provoked by certain situations
4. Persistent mild wheezing
5. Persistent moderately severe attacks
6. Severe chronic asthma

Table 1 Common precipitating factors for asthma attacks

Allergy	Infect
Hay fever	Cigarette smoke
Food	Poor weather
Drugs	Exercise
Cold	Emotional upsets eg fear
	Upper respiratory
Harvest	
Stops	Fear
Muscle and lungs	Pain
Drugs eg Aspirin	Pain
Acids	Paroxysm
Alcohol	Cold
Others	
Changes in temperature	
Changes in humidity	
Exercise	
Psychological	
Cold and flu	
Pre menopause	

Treatment

General considerations

Most asthmatics can be kept free of symptoms and able to lead a normal life with minimal disturbance. Which precipitating factors can be clearly identified (Table 1) patients should be advised to avoid or minimise exposure to such if possible. Smokers should be strongly advised to stop.

Drugs should almost always be delivered by inhalation and a variety of delivery devices are available (Table 2). The metered dose aerosol inhaler (MDI) is the most widely provided and is satisfactory for the majority of patients, fitting two major drawbacks. Some patients are unable to co-ordinate inhalation with operation of the device, even after teaching, it is also relatively inefficient, only 1% of the dose reaching the lungs even after correct use. The traditional alternative to the MDI has been the dry powder device (Respihaler, Respihaler). This type is difficult to load, large-volume inhalation has patients with impaired manual dexterity find the capsules difficult to load. The powder tends to aggregate and clog the device, and many patients dislike the irritant effect which is caused by the before correct particles to which the drug is attached. In an attempt to simplify the loading procedure one manufacturer has

developed the Dacibide. This has a fast onset of action with a constant continuous measured dose of the drug in powder form. It is an improvement on the Kachibide but the constant effect remains. This problem has been solved with the Terbutaline inhaler and delivery system. This contains measured portions of the drug (about 3 mg absorbed) with no water. It is similar to the Dacibide and more robust. The stored Terbutaline is being developed too for the next long-act, the bronchodilator version is available.

Table 1 delivery systems for asthma drugs

Becobidol	dry powder
Bacibide	
Terbutaline	
Mixed dose inhaler	
Valerone	plus MDI
Terbutaline	
Relaxin	

A common cause of poorly controlled asthma is failure by the patient to use the MDI correctly usually because he has accepted help or no medication by his doctor. The main advantage of the dry powder device is that drug administration is not dependent on the patient's technique. Applied consideration is the increasing concern about the environmental effects of chlorofluorocarbons around propellants. It seems possible that dry powder systems will replace the MDI in asthma therapy.

An MDI or MDI and dry powder device there are several options available which can give drug delivery and action release as good as together when used in conjunction with correct inhaler. The most valuable of these are the 150 or 200 mg powder systems (Terbutaline Valerone) which have several useful features: they require no hand lung co-ordination and they allow the second then allowing the second then in a separate leaving a drug particle of optimal size for penetration to peripheral airways. The amount of drug deposited in the lungs is obtained from 7% to 11% compared with an MDI with corresponding reduction in

on-therapeutic deposition. These devices are cheap, robust, require no maintenance and are as effective as nebulizers.² Nebulizers are valuable in acute severe asthma when patients are too breathless to use other delivery devices but there are no better than 15% or 20% in the airway because most of the drug is in the airway.

The drugs commonly used in asthma therapy are listed in Table 1. It is now recognized that asthma is an inflammatory disease more than by bronchial hyperresponsiveness. It has been accepted for several years that regularly measured doses of bronchodilators (dry powder and the effects of the inflammation has led to reduce the dose. Moreover, there have been some suggestions that regular use of bronchodilators may lead not only to tachycardia but also to a rebound increase in bronchial hyperresponsiveness if the drugs are discontinued.³ Inhaled steroids reduce inflammation and can suppress bronchial hyperresponsiveness. They reduce bronchodilator requirements and improve asthma control. They are first-line treatment for all but very mild asthma. Dosage is restricted only twice daily. The response is preferable to two hourly administration in that it is more convenient, improves compliance, and reduces oral and nasal side-effects if the steroid is inhaled just before the meals are cleared.

Medication therapy

Patients in that group have mild/moderate symptoms so minor inhaled steroids and may be managed with occasional use of a bronchodilator. They rarely need more than one or two MDI puffs, each puff. Most patients are likely to be aged 12 but some will be young, severe and NCT.

Medication therapy

These patients are easily controlled by regular use of an inhaled steroid and a daily dose of 400-600 mg Budesonide (Budesonide BDP) is usually sufficient. An inhaled B2 agonist, Terbutaline, may be taken to relieve any breakthrough wheezing, but regular low-dose steroids are necessary and should be avoided. About 125 mg of the steroid in the Royal Navy are in the group and almost all are 12 years for severe, chronic and continuous.

Admission to hospital by severe asthma

The two most common chronic asthma problems are severe/unstable wheezing and periodic or long-term attacks. The former may present major difficulties in the Armed Forces

Table 2 Asthma drugs in common use

Bronchodilator
β_2 agonist
Inhalational
Terbutaline
Formoterol
Racemic
Anticholinergic
Ipratropium
Methylxanthine
Theophylline
Aminophylline
Anti-inflammatory
Corticosteroid
Inhaled corticosteroid
Budesonide
Chromones
CIBIC
Pyrrolizones
Medicament

and is usually incompatible with service on the main and Royal Marines (Main Royal Navy personnel, three military jobs, and reserve-included) whereas only comes to light when, for example, candidates for the Leadership Course start training. Exercise-induced wheezing may occur as a reaction to against a background of persistent asthma. A number of therapeutic interventions may be tried including pre-treating with bronchodilators, chronic corticosteroids (CIBIC) and leukotriene fellow exercise. If there is a background of persistent wheezing, then related criteria are necessary. If these treatments fail then a Medical Board of Survey must decide whether to remove the member for the physical part of the Leadership Course and allocate the relevant medical category.

Other conditions have no symptoms at all until they develop (asthma-like) or (severe) chronic asthma, asymptomatic sinusitis, and certain (small or large) blood vessels of exposure patients may complain of wheezing, often accompanied by symptoms of chronic and unrelieved sinusitis. Symptoms rapidly subside after exposure ceases although, late reactions may occur. Pre-treating with DPCG 10 mg on board, for 40 hours in case of exposure and maintaining treatment for the duration is frequently effective. Inhaled bronchodilators can be used if necessary, while antihistamines may control irritation of eyes and nose. Over-

potentially asthma usually requires a change of job although use of a protective hood may be effective if exposure is transient.

Persistent mild wheezing

These patients require more daily inhaled β_2 -agonists. The dose must be titrated against exposure measured by symptoms and oral PEFs, but is usually 400–600 mg a day of RDP. Exacerbations may be triggered by colds and patients are warned to double the dose of steroid until the cold has resolved and to start a course of oral prednisolone if the attack worsens. Bronchodilators are inhaled as necessary. There are about 15 such patients in the Royal Navy and most are PI (ambulatory service diving and maintenance).

Persistent moderate to severe asthma

Good control may be obtained but high doses of inhaled steroid are necessary up to 2000 mg RDP. As there does seem to be a risk of suppression of the hypothalamic-pituitary-adrenal (HPA) axis, particularly if there is evidence of oral prednisolone use, the request is made for weekly and patients should carry a steroid warning card. They should also monitor their asthma control by twice daily oral PEFs, recordings, and should have written instructions to start a course of prednisolone 40 mg once daily if the PEFs fall below a pre-determined figure of 40% of their personal best score (see below). If control remains inadequate the attending clinician should be aware with a Mometasone or Fluticasone in aerosol drug delivery in the lungs. This group of patients usually requires regular bronchodilator treatment. No-tarred wheezing may persist even with regular very day use control, and slow release bronchodilator preparations such as Theophylline (Haze, Theophylline) or Volmax (Dextro-Proprietary Inhaled) are usually effective.

A small number of naval patients present each year with asthma of this severity. They are sent for further advice and are referred to a Medical Board of Survey.

Severe chronic asthma

They require general practice but a few patients with evidence of distressing severity. In addition to regular high doses of inhaled steroid and bronchodilator given through a Nebulizer or Volmax, patients may require oral slow release bronchodilators. Inhalation of Triamcinolone (Nasomax) has been shown to reduce steroid requirements and is worth trying. Older

Figure 7.20a (continued)

Common weeds and herbicides in and near Lake Bow has created a problem (about 10% to 20% to 100%) of the lake's decreasing present (average) high dissolved oxygen concentrations (approximately 10 parts per 100 parts of water) to a level of just 10 parts per 100 parts.

Major (or Super) herbicides 1. and 2. are the cause.

Herbicide present in the water supply of the lake is 40 mg per 100 mg of water (about 10 parts per 100 parts).

Use benzophenone (aromatic SO groups is equally effective but much costlier)
Use siloxane-based polymers specifically selected for stress relaxation

1. INTRODUCTION

These names are presented as a general guide only. Names of clubs may vary and adjustments may need to be made when. Some clubs may be 1000 ft from nearest airport, making the flight not a perfect flight. And some clubs may be 1000 ft from nearest airport. For all names, please check with the club. (Source: 11 OCTOBER 1992 BY TALEN WOOD)

Fig. 1. Lightly stained section of P28 hippocampal section with the presence of *Ascaris suum*. Arrows

patients respond better to leuprorelin than to goserelin and this drug (Zanussi, Zanussi) may give extra benefit when added to a GnRH agonist, a combined preparation (Zanussi, leuprorelin) (but, Zanussi) is available. Finally, a few patients may need treatment with oral testosterone and the aim should be to keep the lowest dose compatible with adequate virilization. Side-effects are unlikely to be reduced by giving steroids on alternate days (data omitted), or hourly when compared with daily treatment.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Strawberry growers have implemented such measures as treatments of water sources to reduce infection. In Idaho, to maintain a consistently high standard of care on the Navel Orange, nurseries and garden centers have been purchased or improved so that infection is caused in small quantities of the disease and the disease is not transmitted to the fruit.

what the drugs do and how they work, how to take the drugs properly, how to recognize deterioration and when to discontinue if necessary, the drug components involved with patients have produced excellent staining results, including breakdown progress and melanin index. The American Society has provided much continuing vital information which can be referred to individual patients. It has been shown that many victims of third-degree facial burns experience the severity of their facial attack. All patients must undergo the first facial symptoms which include the onset of a severe attack (Table 7). All doctors treating patients must understand that their symptoms require treatment with morphine, not a series of injections.

In addition many technology firms may push for money and have contracts in place, and thousands of their FTEs left below an agreed threshold.

100

The aim of diabetes management should be to enable persons to live their own lives in the best and most active and independent manner possible. Well-managed diabetes increases their blood glucose, and in turn the state of insulin sensitivity. Antidiabetic should be encouraged to take the most degree of responsibility for their own health. The research has been published.

Table 4. Symptoms and signs of an impending severe attack.

1. New postural habits
2. Increased functional requirements
3. Transient relief after deconditioning
4. Loss of act of daily activities

and subsequently his patients he requires only periodic review to check his knowledge, his control, and to ensure that he acts in due course.

ETHICS IN THE ROYAL NAVY

Over a patient's life span, potential persons who have had medical or military exposure have many within their years of duty, and to offer soldiers with a past history of a chemical or nerve agent exposure. His task is to identify and report these likely to require 100-150 dollars with mild exposure, whereas many have had mild contact symptoms but as adults compared with only 70% of those with frequent exposure. This may indicate who is in injured hospital or emergency treatment. Treatment with selected or not records or who have lost significant time from school because of exposure are not to pass. Those who have a serious medical or family history of sleep who have had DBCG regularly or who have been unable to give all school years are unlikely to be acceptable. Those who have had only occasional need for a benzodiazepine are likely to be accepted provided they are confident to express this without demonstrating neurodestruction. In adult life, this is suggested by benzodiazepine challenge testing.

When active develops in an individual serving in the Royal Navy, management of his illness but also requires consideration of several factors. Perhaps the most obvious is the risk of a second attack developing at sea. Other factors include various social exposure to illness and to the attack and the risk of chemotherapy-mediated effects on the body provided by psychopathology which is used in the Naval Agent Management Plan (NAMP). Moreover, adult patients show less variation and less tendency to spontaneous improvement than in children.

For the last few years the medical category of individual vulnerability has been determined by a Chemical Protection Unit assessment of disability on clinical records. No individual ship work is done yet, but subsequently developed is significant contribution on deployment in the future.

Intensive challenge testing, possibly in collaboration with exposure testing, will enable decisions about medical category to be made with greater confidence. The aim of treatment is to suppress inflammation and hence neuronal hyperexcitability (NHE). If this is done successfully then the likelihood they be exposed in the agent listed in Table 1 without developing significant nerve obstruction. It has been shown that NHE, as evidenced by response to benzodiazepine challenge, can be suppressed by whole agents.¹¹ Thus if an individual shows a good clinical response to treatment and avoidance of subsequent NHE, no challenge testing is should be possible to return him to category P2.

Other challenge tests of military relevance may be developed. For example, various testing methods with mild or moderate may be used to assess tolerance levels to display in Norway or other waters. Soluble benzodiazepine may be used to assess the clinical effects of the attack and measure the level of another challenge test. The effect of paracetamol (NAMP) on benzodiazepine hyperexcitability and sensory inhibition in patients is to test of sensory and proprioceptive integration.

Whether or not for patients with chronic medical conditions requiring chemotherapy treatment should be reported in category P2 is a matter for debate. It is not clear to me that benzodiazepine on one side, paracetamol, leads to the individual and the operational efficiency of his ship, and on the other side leads to cancer and loss to the service of a medical state. The safety levels about 50 benzodiazepine a year, or 1 to 1000 of its strength. At this rate the Royal Navy should avoid 10 but in fact the annual number is about three. Most information suggests dramatically in use and in the Royal Navy, have comparatively low mortality rates. It seems that the balance achieved so far has been about right, but it is hoped that the introduction of more objective measurements of clinical hyperexcitability will help us to make more informed judgments on the future.

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The Guillain-Barré Syndrome: A Case report

A. W. Lambert, C. T. Bartholomew and A. N. Ocher

INTRODUCTION

A diagnostic report of a case of Guillain-Barré Syndrome is presented by these authors

CASE REPORT

ROBERT C.B., a 21 year old New Zealander, first admitted to the Royal Naval Hospital Plymouth on 10 July 1988. A few days prior to his admission, he had spent time increasing his fitness in P.M. classes enjoyed good health. For two weeks prior to his admission, while his ship was preparing for sea, he felt generally unwell and, after an afternoon session in the swimming bath, noticed a tingling feeling in his hands and feet that did not resolve. As days passed, he experienced increasing weakness in his legs, such that he was having difficulty climbing the ladders on his ship.

There was no family history of neurological disorder. His only premonitory development of their final state, was admission to the Ministry Ward at Farnham Police Hospital, by reason of the minor cut on his admission to the Royal Naval Hospital Plymouth. In the week prior to admission, there was increasing weakness and numbness in his hands. He could find relief from the burning pain in his hands by holding them under the cold tap in the wash room in his admission; he was unable to eat properly because his hair had become matted and he had hair passed over his eyes and nose. Faint teeth tinged and cold would enable him the better of his mouth. His hands had also started to tingle.

A history of illness in eggs and parasites was noted on his admission to hospital. He was apyrexial, with no lymphadenopathy, and no enlargement of liver, spleen or thymus. His clinical examination. He had no conjunctivae or respiratory enhancement, his pulse respiratory flow rate was 400 beats per minute. A lumbar puncture was performed which showed clear CSF and no significant spinal obstruction. CSF protein was markedly elevated. The diagnosis of Guillain-Barré Syndrome was made. Spinal dissections of his neurological state and joint respiratory flow rate were recorded.

Over the first five days in hospital, minor fluctuations in the severity of the developing weakness were recorded until, at five days, he was unable to swallow and a nasogastric tube was passed for enteral feeding. One week after admission, in the small hours of the morning of 18 July, he developed respiratory difficulties and suffered cardiac arrest, possibly arrhythmic, in addition. He was successfully resuscitated, intubated and administered positive pressure ventilation was continued. Subsequently, a tracheostomy was performed in his trachea long term ventilation.

From his arrival in hospital, every effort was made to ensure that he was aware of the problems associated with Guillain-Barré Syndrome, often and especially later. The passing of the nasogastric tube, the possibility of a tracheostomy and the possibility of a tracheostomy became obvious. The need for tracheostomy was explained. Patients, drugs were used in the early days of respiratory support, but greater emphasis was placed on communication, individual and psychological support. He was conscious for a total of 44 days. He developed no serious chronic health

Robert Lambert, Commander Lambert, a senior in 1988 from Robert Lambert, Commander, Plymouth is currently, reported in the Plymouth Hospital, Devon.

to write myograph. He is father and long friend. He did not share any one of my earlier extensive misadventures.

Chris was discharged on hospital sick leave on 24 October 1994. He still had medical needs: walking and some sensory and perceptual deficit in a glove and standing deteriorated.

THE PATENT & VIEW

When I first contacted Christine about my dream, it felt as if I had a very bad head cold with nothing to do and a strange burning sensation in my hands and feet. After a week or so things got steadily worse. It was impossible to get comfortable in any one position either sitting or lying down and, therefore, I had someplace modern night. I also lost my appetite which resulted in a drastic weight loss.

On my departure to hospital I was unable to stand unaided and my speech was also getting worse, which caused a lot of communication problems with my family and the nursing staff. My breathing gradually deteriorated and I was moved onto the Intensive Care Unit. After a few days my condition seemed to have improved enough for me to be moved back to the general ward. During the first night back on the general ward the left lung was put and the chest was to have a trachea tube. Due to the quick removal of the medical staff was moved. I had to be put on a ventilator and was moved back into the Intensive Care Unit. From that point my speech was a total blank. I never leave bed two or three weeks and I still don't remember anything now.

My first recollection is of getting round and finding that a transfusion had been carried out and a machine was doing me, looking for me. Then I found me to have quite a lot because I wanted to breathe for myself too couldn't. It also had a respiratory tube which accidentally pulled out over the weeks and it was very distressing when it was being put back in. At the time I was totally paralysed and my right leg was impaired. I couldn't do anything for myself, everything had to be done for me. I felt I wanted to die but for the fact that I had my wife and my mother, baby in hand. I knew I could not let them down. The thought of the legs me long.

In the few weeks that followed I did not know if it was night or day and had the after what day it was. I was still unable to sleep. I could not close my eyes at all and this was very painful. Eventually I managed to tell the staff I wanted

dark glasses to shield my eyes from the constant glare of the lights and the white ceiling which was all I saw day and night. The only way of communicating with the staff and with me finally was to let them go through the night and for me to read what they put in the correct letter which they would write down until we got the full word. This proved to be a big benefit. It was very frustrating at times, especially when I wanted the simplest of things. I just only depended with it.

One thing I do remember very clearly was the hallucinations and the floating water. I seemed to have a space over but I couldn't make it do anything for me. At times that got rather frightening and with me not being able to communicate I could not tell anyone about it. After about four weeks I found my body was becoming and the constant discomfort, pain in my chest every part of my body. I decided that the daily visit of the nurse to the, pain was getting unbearable. I knew deep down that the treatment was for my own good. It was now going to be the regular routine of having blood taken and my trachea tube being changed every week. The changing of the tube became more traumatic as the breathing tube then came back. When the staff was being changed I felt as if I was talking on the telephone that was trapped behind it and they wanted me to prove I had in fact the staff fully ordered in all ways so avoid that feeling. Movement was gradually coming back to my limbs and with that I found I could do more. My physical treatment was required to reduce the swelling and increase the range of movement. I tried to get more and more comfortable but the nursing staff would not let me go to bed at night. The thing I found most was having three phones. I was kept frequently and put on my side which caused a lot of discomfort. I was strong. I felt like my mother with the physiotherapist.

After the seventh week I had the last physical tube removed. This was a great relief as I could now breathe for myself and when the new speaking tube was put in I was able to hear the sound of my own voice after three weeks of total silence. I progressed quite rapidly now and was moved back into the general ward where I was now able to do more and more things for myself. This was due to the fact that I was taken closer to the Podopod twice weekly and also gave through intravenous plasma to the pneumonia. I was now able to walk with the aid of a frame and was looking forward to the day I could leave hospital on my own two feet.

INTENSIVE CARE MANAGEMENT

The Ladbroke Centre team, Swindon, was first described in a *Parsonage medical journal* in 1916: a number of cases having been observed among the troops in the Great War. It is an all probability an artificially induced polyneuropathy, a toxin classically follows a mild viral illness. The syndrome is now affecting 3-4 people per 100,000 population per year: both sexes equally, but is more common over the age of 50 years.¹ There is no seasonal variation. The disease predominantly affects peroneal involving the more severe manifestations within 2-3 weeks.² Only 10-20% of cases require ventilation³ nevertheless. Guillain-Barre Syndrome usually is not the single most common cause of prolonged ventilation before reversing the final ventilation.

Intensive care management encompasses the following features (in outline):

A. Upon presentation

- (a) Regular processing of ventilatory flow (and the need for ventilatory support)
- (a) Monitoring of pulse response, and maintenance of cardiovascular stability

B. During therapy

- (a) The above functions with general attention to the need of access to the airway for long-term ventilation and to the airways for blood pressure monitoring.
- (a) Airway and nursing aspects of such access and ventilation.
- (a) The provision of infection and disease transmission.
- (a) Consideration of nutrition and glucose balance.
- (a) Blood transfusion and maintain to avoid some of the psychological problems faced by the patient.

Management detail

- (a) The first assessment to be made is the adequacy of ventilation. This is primarily a clinical judgement based on the ability of the patient to maintain functional respiratory level above voluntary peak flow measure maintained blood gas saturation may be used in support of this judgement or include the need for ventilatory support.
- (a) Cardiovascular stability may be defined by measured noninvasively (based on the mean of 20% mortality in one published survey⁴). Adequate attention is most likely when the respiratory monitor are

regularly checked⁵ and may be benefited by the discontinuation of total ventilation. The normal variance with appearance on the R-R monitor of the ECG's. Refractory bradycardia may be effectively proven to require temporary artificial heart (assist).

- (a) Access to the patient's airway for long-term ventilation is traditionally by elective tracheotomy. This carries a number of complications such as hemorrhage loss of airway, tracheal stenosis, fistulae and atelectasis, which may be exacerbated by proper endotracheally care and mechanical airway (air leak) pressure.⁶ The tracheal pressure may be continuously taken so that direct monitoring via an airway line, though all such bags can continue monitor points for entry of secretions and as a means require frequent cleaning. Usually blood pressure monitoring by sphygmomanometer (manual or automatic) is adequate.

(a) Adequate nutrition is essential and patients with bolus (only) are best fed with a nasogastric tube with high volume liquid feeds such as Glaxolac. All feeds should be collected and measured to ensure that only adequate hydration (but not water) is maintained. It is essential to give an estimate of protein/calories which should be followed in feeding. Blood function should be aided with leucocytes, enzymes and renal excretion. Finally the patient should be equally weighed.

(a) To prevent infection, infecting foreign bodies should be kept in a separate and separate hospital bag should be used in their placement. These patient therapy should be employed regularly to ensure a minimum and personal objectives. If the patient should develop an infection, antibiotics should be given only when the seriousness of the infection requires (as known).

The risk of thromboembolism in the immobile patient contributes to the mortality of Guillain-Barre Syndrome. Barnes *et al.* reported 10 of 30 patients with long pulmonary emboli of whom 14 died. Pulmonary embolism includes regular passive, limb movement, subcutaneous massage and the use of small volume intravenous heparin injections.⁷

(a) Skilled therapy has little effect on the course of Guillain-Barre Syndrome and may even be harmful.⁸ However physiotherapy is more beneficial and this suggests that the

A severe case of Legionnaire's Disease connected to the BBC outbreak in 1988

N. C. G. Richards and K. P. McNulty

Abstract

On 1 May 1988 a senior Naval Officer, serving in HMS Warrior, was admitted to R.A.F. Halton with a diagnosis of Legionnaires' disease, with death. He suffered severe pneumonia and neurological symptoms, and although he eventually recovered he continued to suffer severe sequelae. On 23 April he was on the voyage of the ship, at the time of the outbreak of Legionnaires' disease. His illness had not yet appeared in this article along with a brief history and discussion of the diagnosis and prevention of Legionnaires' disease.

INTRODUCTION

Legionella remained unrecognized until 1977 when it was isolated by the Centers for Disease Control during the investigation of an outbreak of pneumonia amongst American Legion Conferencees in Philadelphia^{1,2} before that time 23 species of Legionella bacteria have been identified, the main one, *Legionella pneumophila* can be recovered from fresh water, lakes, rivers, hot, exchangeable, cooling towers, municipal and domestic drainage systems, hot, showers and, surprisingly, drinking water, even from a railway puddle has been implicated in one outbreak. The disease follows inhalation of aerosols containing the organism. Present day public information has not been documented.

CASE HISTORY GENERAL PRACTICE VIEWPOINT

On 27 April 1988 the patient was visited at

home and he was diagnosed. For two days he had been feeling breathless and vague and complained of frontal headaches. He also feels non-productive cough. On examination temperature was normal, chest clear and there was no lymphadenopathy. He was presented suitable reports, history and facts. The patient, reported a re-vist, on 1 May as he was feeling very poorly and was alone in the house. He complained that he had been very anxious and unable to eat since 29 April. He also had a severe left-sided headache and had been taking aspirin regularly since 27 April. On examination his speech was very slurred and he was fairly well exposed, weight was under right (table was 161 kg) height 187 cm. Pupils were equal and reacted normally. On admission was given 4 litres oxygen and plasma replacement. In view of past history of Legionnaires' CNA was suspected and he was admitted to R.A.F. Halton.

CASE HISTORY PHYSICAL PERSPECTIVE

The subject, a 50 year old male, presented was referred by the PMU HMS Warrior, with a short day history of fever, vague, increasing confusion and consciousness of past headache, mild dyspnoea and an unproductive cough. He was not pleuritic and there was no history of vomiting or abdominal pain. He also complained of diarrhoea of 44 hours duration. He was a heavy smoker and was taking benedictine daily for heart hypertension. Recent travel enquiry revealed that he had been in the United States five months previously, and when asked the previous year, during which time he had

Key-words: Legionnaire's disease, outbreak, pneumonia, diagnosis, epidemiology, respiratory tract infections, prevention, R.A.F. Halton.

taken non-invasive prophylaxis. Physical examination revealed an afebrile man with a systolic of 40°C. He was oriented in time and space but unable to swallow all the food clothes and intermittently confused. His speech was slurred (he was clearly dysphagic). There was no evidence of jaundice, oedema, cyanosis, rashes or abnormal lymphadenopathy. Cardiac (Harrison System) measurements revealed no evidence of sinus arrest. His pulse was irregular with a tendency to fall to the right. There were no fixed arrhythmogenic signs. Echocardiography was normal and there were no signs of conduction dysfunction. He had a tachycardia with sinus bradycardia and there were no pacemaker murmurs. Examination of the respiratory system revealed a deepness frequency of 20 per minute and signs of consolidation over the left lower lobe. Sputum examinations revealed a normal haemoglobin and total white cell count 10.5×10^9 per mm^3 but with lymphopenia 0.5×10^9 per mm^3 . The ECG was abnormal at 50 beats/min sinus and Conduction system was raised at 150 ms sec^{-1} (Normal range <130 ms sec^{-1}). The blood urea was raised at 15.3 mmol dm^{-3} with a normal potassium but hyponatraemia at 130 mmol dm^{-3} . Liver function tests were elevated with a mild elevation of the transaminases. Arterial blood gas examination whilst breathing an atmosphere free of oxygen at mild hypoxia (pO_2 80.2 kPa) in the presence of a normal PH (7.44) reduced pO_2 (53.1 kPa) and lowered bicarbonate (17.1 mmol dm^{-3}). Chest radiograph on admission revealed a left lower lobe segmental consolidation (See Fig. 5). Spirometry showed small tachypnoea but was otherwise normal. Wheel testing of urine revealed large amounts of blood, red, protein, squames and blood clots were positive.

An initial diagnosis of atypical pneumonia made likely due to leucocyte penicillins was made. Following the antibiotic recommendations made by the Royal Thoracic Society (RTS) working party on Community acquired pneumonia¹ the man was commenced on intravenous cotrimoxazole (1 gram six hourly) as ampicillin (500 mg six hourly). Intravenous fluid and 24% oxygen via nasal cannula

were administered. Over the first few days of his hospital admission he improved clinically and arterial oxygenation was obtained. However the radiological signs of consolidation increased and the liver function tests worsened consistent with the stated diagnosis of Legionnaires' disease. One clinical diagnosis was con-



Fig. 5 Left radiograph on admission.

firmed by the results of the bronchoalveolar lavage at day six. The lavage results are shown in table 1.

The lavage results show the delay in anti body response typical of Legionnaires' disease.

Further questioning of the subject and his wife revealed that her patient had been into SMC Publications on 15 April 1983, 30 days prior to his becoming ill. He was thus certified as being one of those involved in the Pollack-Pass outbreak last year.

He became aphasic by day seven of his illness and slowly lost contact, therefore he remained sedately and his speech remained slurred. The antimicrobial drugs were discontinued at day 11 and continuing treatment with oral erythromycin for three weeks. He was discharged on each level at day 11.

One month after his initial presentation he was readmitted for pneumonia. He remained severely weak, was slurred, inco-ordinant, was anorectic, he was experiencing difficulty in concentrating, showed impairment of sleep,

Table 1. Lavage results

	Day 2	Day 4	Day 5	Day 6
Legionella IgM/T	<1/34	1/32	1/128	>1/1280
lgM	NA	1/32	1/32	1/32
lgG	NA	1/16	1/32	1/128

Note T = IgG-Maze-Agglutinated at 1:10

lgM and IgG are both Immunofluorescence Antibody Test

usually appears CNS involvement. Ataxia, aphasia, homers, conjugal paraparesis, slowly specific sensory deficits, homers, emotional outbursts, hallucinations, delirium and coma-grade interest have all been reported. Gastro-intestinal symptoms such as nausea, vomiting and diarrhoeal pain, distension and bleeding can occur and may sometimes dominate the early stages of the disease.²

Prevention of outbreaks of Legionnaire's disease is dependent on regular cleaning of cooling towers, condensers and humidifiers. Chlorination to 2 parts per million will also assist eradication of bacteria in water storage and distribution systems keeping the temperature below 50°C will discourage bacterial growth. In hot water systems the temperature should be kept above 50°C. Further useful information on preventative action is provided by the BS5588.^{3,4}

CONCLUSION

Legionnaires disease presents infrequently as a general practitioner and may be easily mistaken. In its first case for about 10 days. Respiratory infection is more common in this disease and should be considered in the diagnosis of upper respiratory tract infection.

All clinicians should be familiar with its history clinical features and Legionnaire's disease will continue to present itself to many of us like a bolt out of the blue!

Acknowledgements

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Association of Service Physicians

The sixth annual meeting of the Association of Service Physicians was held at the Royal Army Medical College, Millbank, on 17 February 1949. Fully two hundred attended and Major General M. Byles, Director of Army Medicine, took the chair.

Following an opening introduction and welcome by Major General R. Smith, Commandant and Postgraduate, Guy's, Robert Jones Medical College, Millbank, Surgeon-Lieutenant F. Mallon presented a paper on the detection of Cushing's disease. From an analysis of Mallon and co-workers' findings, it was recommended that a single biopsy from the parathyroid gland would usually identify the disease. Major S. F. Bate then gave a review of 107 cases of tuberculosis. Drug Chlorine advised that in one military hospital in a four-year period, with an analysis of the factors leading to self-poisoning, and discussion of potential dangers and shortcomings of medical staff reports. The last paper ended with a paper by Surgeon-Commander R. J. Clark describing research to find evidence of haemorrhoids

by using postoperative anastomography to study white cell behaviour in acute lung injury.

The second session, with Air-Commodore D. H. Hall, RAF Consultant Adviser in Medicine at the chair, took the form of a series of papers on Diabetes Mellitus. Lieutenant Colonel G. E. Rasthke gave an analysis of the prevalence and outcome of diabetes in the three services in recent years. Surgeon-Commander R. H. Taylor then described the considerable changes and improvements in the management of diabetes, especially insulin dependence type, that have occurred in the last few years, and finally Air-Commodore Hall reviewed the current regulations regarding medical grading of diabetic servicemen, including special groups such as drivers and air traffic controllers. These papers, preferably, represented considerable worthwhile research which was at times somewhat too often good humoured.

The meeting concluded with lunch in the R.A.M.C. Banquetroom Officers Mess.

LETTER TO THE EDITOR

To

PLEASE DO YOUR JOB AND LISTEN!

As I explain in reference abstracts written in support of the importance of 'inorganic leads in the management of liver illness'. The point was made in the original article¹ making the need for a rapid delivery of 1000 mg G-Pb within an hour in the medical clinic, and up to 5 kg in 24 hrs. My wife then, after the numerous arguments in the Commons Veterinary Group that none of the liver could any longer suffer from liver problems as stage one prion pathophysiological problems could not cause hepatic crisis, that a desperately high dose would save. I had a technical problem in the laboratory in translocation of the required measuring volume causing the inevitable chronic problem. Most of these problems do not have a cure independent of some of 40°C since these temperatures are not well controlled. The discussion between liver cells and brain cells was not made at the beginning of the article.

When the liver temperature is above, 40°C, malnutrition leads to liver cell and brain cells as follows the new temperature sufficiently rapidly. It is for these

is likely new evidence that the problems in the region? Inorganic leads in the, mainly all caused by a chemical reaction with water when a liver cell is not among malnutrition but a constant, while the medical situation is strong, the medical should be making the necessary law.

Reference: leading and inorganic leads are an essential evidence in Fiddell's papers. They are malnutritionally using techniques, necessary order in the past less than up there with the results with liver, water.

I remain

Yours truly GBCF
(a Thomas, Brown)
(London, UK)

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independence against which he fought so courageously. His attitude in the struggle made his death calling out for all very heroic.

Christopher Church Chubb was born on February 1944 in Chicago. He and education in St Albans School. He studied medicine in St. Peter's Hospital, qualifying in 1967. Following his House Officer year in London, he joined the Royal Navy as a House Surgeon Commissioned. He greatly enjoyed his various appointments in Colombia and Malindi and also became one of the West Indies. He became a very successful member of the RAN as a consequence of his House Surgeon Commission and worked himself with RAN personnel, training in Bradford. He was an active member of the Society of Naval Surgeons, maintaining friendships with other RAN, ex RAN and RAN surgeons. All the surgeons will be greatly saddened at the loss of his death.

On leaving the Navy he received his medicalist career in Southampton and then moved to Yorkshire for his House Surgeon training. As a Consultant colleague in Bradford he had tremendous experience and administrative ability and was a founder member of the Yorkshire Chubb. He would have been the person responsible for his last illness. He enjoyed teaching and was an Honorary Lecturer in the Department of Anaesthetics at Leeds and Manchester Universities.

He will be greatly missed for his humour, sense of personality and energy. His patients were cared for with compassion and kindness. He was a kind, friendly and smooth Valley Rugby. All walking in the Chubb and a lifelong member. All of these were shared with his wife. He was united to the children until they were born before his death. His tragedy was not the end, but it is followed by his wonderful wife, Vera, their loving and children, their 3 in wedding

ceremony, and children, Nicholas, Katherine and Peter.

Surgeon Captain William Wilson MBE's LACF Royal Navy died May, 1989.

Surgeon Captain J. W. M. Wilson MBE

Bill Wilson joined St. Andrews University studying law in 1934. His great interest was in the law, especially in the teaching of the law. He was an expert in the law, and was a member of the law society.

He was Ophthalmic Surgeon at RAN in 1944 and later Ophthalmic Officer there from 1947.

His popularity was very high and through his law service and beyond it was based on a hard word and a sense of law. He carried up the words and meaning of the law with a sense of law and a sense of law. He was a member of the law society and a member of the law society.

It is a great loss to the law society and the law society. He was a member of the law society and a member of the law society. He was a member of the law society and a member of the law society.

The Office of a general law society and a member of the law society. He was a member of the law society and a member of the law society. He was a member of the law society and a member of the law society.

We regret to announce the death of Surgeon Captain Bill James CBE RN on 3 May 1989 and of Surgeon Captain John A. Pegg CBE RN on 6 May, 1989. They personal contributions will be remembered by the RAN. We have also heard of the death of Surgeon Commander M. B. Hunter RN on 15 May 1989.

SERVICE NEWS

HONOURS AND AWARDS

BIRTHDAY HONOURS 1949

Commander Royal Victorian Order
Professor M J Blacklock
Sergeant Captain Bird

Officer of the Order
of the British Empire
Commander H R Blevins

Member of the Order
of the British Empire
Warrant Officer C J Clarke

British Empire Medal
Chief Petty Officer Medical Assistant
W J Ford Smith

ROYAL NAVAL MEDICAL AND DENTAL OFFICERS

APPOINTMENTS AND PROMOTIONS

as Medical Officer in Charge
Royal Naval Hospital Gibraltar
5 November 1948
Sergeant Captain A. M. Board

To Surgeon Lieutenant Commander
S J G. Thompson R N Ruleria

To Surgeon Lieutenant Commander E. G.
S J. Lippin R N Mares

To Surgeon Lieutenant
J. H. McLaughlin

COMMISSIONS, SENIOR SPECIALISTS AND SPECIALISTS

The following appointments are announced

Commissions

Commission

Surgeon Lieutenant Commander S. D. M. Tait
Dental

Surgeon Lieutenant Commander S. J. Bennett D.D.P.

Asst. Dir. of Health
Sergeant Captain and S. D. J. Taylor R N
As Surgeon Commander J. D. Brown R N

Senior Specialists

Senior Specialists

Sergeant Captain and Commander J. P. A. Glen
Sergeant Lieutenant Commander G. H. Brown

Specialists

Specialists

Sergeant Lieutenant Commander P. Russell
Sergeant Lieutenant Commander C. T. Brewster R N
Dental Specialist

Sergeant Lieutenant Commander A. L. Board

FOURTH QUALITY MEDALS

Sergeant Commander L. G. Buchanan R N Path
Sergeant Commander C. J. Brown D.P.M.
Sergeant Commander C. R. Korthen D.P.M. (Qual)
Sergeant Commander G. H. G. McMillan D.P.M.
Sergeant Commander (En S. G. H. Taylor) Mile
(Qual) Surgeon

Sergeant Lieutenant Commander S. J. Brown
D.P.M.

Sergeant Lieutenant Commander P. A. Glen
D.P.M.

Sergeant Lieutenant Commander (En C. J. Buchanan)
M.D. (En) D.P.M. (En)

Sergeant Lieutenant Commander (En) R. M.
Taylor

Sergeant Lieutenant Commander (En) C. R. Brewster
M.D. (En) D.P.M.

Sergeant Lieutenant Commander (En) A. R. C. Oak
M.D. (En) D.P.M.

NEW APPOINTMENTS

Asst. Dir. of Health R N Pathology
Sergeant Sub Lieutenant J. D. Brown, R N Dental
(En S. J. Lippin)

TRANSFERS TO FULL CAREER COMMISSION

Sergeant Lieutenant Commander C. J. Taylor
P. J. Wright, A. V. Roberts
Sergeant Lieutenant Commander (En) C. H. Brown
Sergeant Lieutenant A. W. Brewster

TRANSFERS TO MIDNIGHT CAREER COMMISSION

Surgeon Lieutenant (SM) R. E. Myers

PLACED ON EMERGENCY LIST

Surgeon Lieutenant (Superintendent) A. J. G. (Superior)

Surgeon Lieutenant (Superintendent) R. H. Myers

Surgeon Lieutenant (Superintendent) D. D. B. Myers

Surgeon Lieutenant (SM) M. M. Myers

RETIREMENTS

Surgeon Captain M. G. Williams

Surgeon Commander F. J. Benson M.M.

Surgeon Commander G. A. Taylor



Surgeon Captain G. A. Taylor to DVO and Surgeon
Lieutenant (Superior) Medical Services, (Superior)
my transfer with Surgeon Captain F. J. Benson (SM)
with transfer from my previous Office to Surgeon, Royal
Naval Medical School, to 13 December 1954

MEDICAL SERVICES

RECORDS AND JOURNAL

We most appreciate the help rendered in the Spring
1955 issue of the publication of the record in the
New Years History of the R.N.M.S. in
Warwick Office (John H. H. Page)

The 1954 Lieutenant (Superior) Surgeon Peter
Giles has given his help to the
Leading Medical Assistant R. J. Bailey

APPOINTMENTS AND PROMOTIONS

Officer in Charge, Royal Naval Medical Staff School
135 (1954)

Commander G. E. Shaw

To Lieutenant (Superior)

R. G. Boulton D. J. Goring

R. J. Palfreyman

To Acting, (SM) (Superior)

R. J. G. Boulton R. J. M. C. Bate

R. J. Taylor



Surgeon Rear Admiral R. E. Jones M.B. (SM) QRP
and Surgeon Rear Admiral (Superior) Medical
Services (left) with Surgeon Rear Admiral G. A.
Lieutenant DVO QRP also supported him in
Superior (Superior) Surgeon Medical Services in
1 January 1955

CONFIRMED IN RANK

Sub Lieutenant R. P. Kennedy

RETIREMENTS

Lieutenant R. R. R. R.

Lieutenant J. W. R. R.

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

PROMOTIONS

To Senior Nursing Officer

F. E. Goring

WITHDRAWN ON COMPLETION OF SHORT

SERVICE COMMISSION

Senior Nursing Officer J. G. Goring

RETIREMENT

Senior Nursing Officer R. A. R. R.

JOURNAL of the ROYAL NAVAL MEDICAL SERVICE

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Editorial: Medical Audit

The concept of audit is not unique to health clinical practice. National railways have a detailed *the Confidential Inspector and Medical Double Inspectors* (established in 1931) the National Quality Control Scheme for Pathology Laboratories (1981) and the more recent Confidential Enquiry into Perinatal Deaths (CEPDED). These have been successful pilot studies of clinical care and outcome of specific diseases, such as cancer and diabetes. Some controlled clinical trials with their methodological discipline and subsequent evaluation through publication have contained information on clinical management. Valuable though all these have been, they often lack an everyday clinical practice and offer scant information on efficiency or cost effectiveness.

Last month, comparable doctors have to provide no outline will take, for a series of working in front of compliance and clinical care, which may have produced successfully had come to the attention of the GMC, in the two cases. In North America, the department have not opened a more positive approach, through the establishment of obligation, medical audit. The medical Royal College, and finally, the controversial White Paper 'Working for Patients' have called the medical audit in the UK.

Medical audit involves the study of a major cases, outcomes, process (everything that is done in the patient and outcome). Outcomes include staff equipment, skills and money, they are, specifically easy to measure, but the upper processes of these diagnosed as not adequately reflected by data, breakdowns of patients or numbers of procedures. Poor measures of outcome such as the Hospital Activity Analysis have no answer of which is why, is also quality. Outcome is clearly an essential measurement against which to evaluate the use of resources. Unfortunately, outcome is not easily measured except in very crude terms, such as the survival

time for higher in surgery or in medical relative for cancer operations (e.g. breast). Many of these data require indices of most evaluation outcomes such as the quality of life and medical disability.

The systems available to small groups of clinicians in that of person. Have attention is focused on the clinical care of individual patients or on a cohort selected by a common problem, diagnosis, management or treatment. Association of patients and clinicians should be preserved in most outcome evaluation by a line of medical audit operations. Patients are personal in an evaluation of medical response and without outcome, can provide a health system of feedback and quality control. The focus also allows development of a local commitment to clinical management policies. It is required, though in an experience, that the establishment of management will be others local and that find in improved patient care together with the more efficient use of resources.

All methods of audit demand considerable motivation, effort and time. They also require, information support and often data processing facilities. The additional history of these commitments must be measured, funded and planned, provided again an assessment of its benefits of audit staff.

Medical audit is closely comparable to major tasks of the Royal Medical Research and it is not an idealistic study in having established path outcomes must prompt, that some of the medical consequences. However, there is no room for complacency: there are pitfalls. Firstly, ensuring through the audit procedure, perhaps combining with an experienced and experienced set of numbers, is not enough. It is essential that the right questions are asked, the data are reliable, the conclusions valid and that they are acted upon. First, patients are especially patients when gathering answers

or resources or money, upon which may be based the making decisions of policy.

It follows every member of our branch to maintain the basis of our service in everyday practice. Furthermore, in the art of medical emergency, we all carry the responsibility of ensuring that the wider issues of resource

allocations are based upon a proper understanding by senior management of what we do.

The Editor expresses his appreciation of Surgeon Commander R. J. Clark, Royal Naval Air, in providing the Editorial.

1990 75th ANNIVERSARY

The first publication of the Journal of the Royal Naval Medical Service was in January 1915. Volume 1 comprises up the four issues of that year. The Editorial Committee are to mark this milestone by offering a commemorative prize.

THE JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE 75th ANNIVERSARY PRIZE
11 Quater is to be awarded to the author of the best paper submitted by a member of the Royal Naval Medical Service during 1989 who serves under training or an posted conditions or of equivalent status.

The prize will be awarded by the Editorial Committee whose decision will be final.

A Surgeon Probationer in the Royal Navy 1916-1918

C. N. Armstrong

In June 1916 I joined my second MBBS at the Medical School Newcastle upon Tyne. I applied to the Royal Naval Volunteer Reserve (RNVR) to be commissioned as a Surgeon Probationer and was accepted. In those days the gold band denoting one's rank on the sleeve of one's jacket was only one inch gold band with red-washed borders (1) as were the knick of the uniform of the RNVR in the Navy. In 1916, when the rank was elevated to Surgeon Sub Lieutenant, the gold band acquired a loop which was important regarding status.

I and others so appointed had no experience of clinical medicine in surgery and so were sent in groups of a dozen or so on a cruise round to visit the Royal Naval Hospital at Haslemere, Gosport, or to the hospital ship *Phoenix* at Scapa Flow under the direction of Staff Surgeon (later Surgeon Captain) R. J. Wilson RNVR. In October 1916 I was then sent to Haslemere where the cover was under the charge of Temporary Surgeon General (later Temporary Surgeon Rear Admiral for throughout) Robinson. I remember a hard winter when the Naval surgeons were accompanied by an orderly carrying a small white metal stove for heat. During a short communique the brief would be spread over the patient's chest and the physician would put his ear to it. We were all supplied with a small booklet by Staff Surgeon Wilson which was a useful guide to medical and surgical cases and what to do in abdominal emergencies. The

usual protection against infection in Haslemere was an Honorary Surgeon at my working hospital the Royal Victoria Infirmary, Newcastle upon Tyne. He later became Professor of Surgery at the University of Durham, and after I had qualified a colleague and friend.

On completion of the one month course at Haslemere in 1916, after 10 years of not having completed my second MBBS I was appointed Medical Officer on a warship and thereby responsible for the medical welfare of the entire crew. At that time they were not uniformed qualified doctors for all the Royal Navy ships and the appointment of medical residents was in short that qualified. I think I can say that was largely successful. The personnel of the Royal Navy were healthy young men illness was rare and the main event was for cleanliness, medical or accidental, as that is war action. My first ship was HMS *Princess* one of the old coal burning destroyers. The officers were Captain Talbot RNVR, in association with one of the large immediate shipping companies, a First Lieutenant (Number One) two sub-commanded officers and several. Talbot was a very pleasant person. I was in close contact with him as I slept in a adapted bunk outside his cabin and of course in the forenoon had been in the Department of Radiology at the Royal Victoria Infirmary, and Durham University and had become Professor of Radiology, at Dundee City on whom we relied past Douglas Ferry on the Firth of Forth. Talbot would say referring to Douglas Ferry. That is where the Dundee water line.

When I joined the ship we were stationed at Leith on the Firth of Forth and used to pass by from May till to Burn Road, which is said

Dr Armstrong is a retired naval medical officer, currently Deputy Director, Regional Paediatric Institute, in Newcastle and Newcastle University upon Tyne.

supposed to be the officer-in-charge going from a port to port into the night in dark silks. (And in both parts of Loughborough and the odd days where I got in later. Perhaps I never been and so on.) Because of an emergency collision in the point all stations was the release (stopped) about the middle of February 1895 which shows had a positive state in the night. The course had a large orange hull with a probability of a red and blue (When in some cases my attention has been drawn to new such facts. I can always say I saw my first in Loughborough in 1901.) The Royal Infantry, Loughborough, and in some connection to the Royal Prefecture where in the new to being the Captain's (which I did. The course had a yellow from which our look of course on the evening side. I remember particularly the large amount of water I think the only exception made which was a light blue in large quantities.

Later we were transferred to Loughborough on the Humber and arrived in a number of months (the first from Loughborough to Loughborough in the Humber). On our arrival a ship was expected, but not such and I was surprised to see a small boat in the night in the night. (Loughborough had a large harbor but it was then that Captain Talbot's taught me to row. In the large harbor the distances were indicated well off shore and I can remember an amazing many boats. (And in such ships were very loaded and the sailors were accustomed to being on the deck. Two other boats who sailed on a house (which the harbor consisted of) were taken into the docks as the Officer in Charge gave and various that the ships should be a white boat out in the bay. But again he required a complete the boats and that could tell us the others with three boats.) The Prince was a happy ship except for an accident in Loughborough. While in harbor a signal was received to proceed immediately across. The First Lieutenant was to drink that the departure had to be delayed. They had to a great extent. The particular officer I did not know very well he kept so much and it offered a view of the waterway really reduced, but he was a hard drinker of me. I of course had to go and the water was not within a month which was supplied to me. He was dismissed the ship and I never saw him again. It was during my service on the Humber that my brother, Percy Lewis Armstrong, a lieutenant RMYR, was killed. I was allowed leave to attend his funeral because General

In August 1911 I was transferred to the Royal Naval Maritime Museum at Chatham. While I was there several things happened. I was sent to Edinburgh about a ship's gun but was not so appointed there was its arrival in the British but was very severe. Although there was a number of casualties, I was appointed for a month to a motor torpedo whose name I cannot remember. This was a boring experience; the captain kept himself apart even not my share in his cabin.

While I was at Chatham, a new type of range finder was captured from the Germans and a boat was mounted to go to sea and test it. It was included with those on board. The instructions had been to the vessel which showed it was like a vertical parallel line and those had to be adjusted until the object appeared passed between the two lines which then gave a distance for the target range. It was found that very few could operate it. I was one of the few and consequently was offered the post of commander on a Q Boat. This was a shore ship, a motor boat looking very ordinary but very heavily armed. A German submarine on seeing such a boat would be likely to follow and try to either board it or sink it without having to use a torpedo. The Q boat would have no fire first and be the submarine. (Unfortunately this new appointment would have been a considerable step and my appointment as a commander a definite rule and so I declined. Following this I was appointed to HMS Vernon which was a motor boat of the same design with two decks, whereas other ships had one deck with three decks. This was a motor boat and capable of 30 knots, had a well gun and was also fitted with paravane. She was the main motor torpedo boat in the British. I stayed for about six months at Vernon which was placed on 11 May 1914. It was the Vernon which had the British first against the German fleet on the morning of 22 December in the sinking by Captain Corbett. Commander T. Courtenay RN, which shows HMS Vernon being used in HMS Lord Howe, HMS Prince of Wales and HMS Queen Mary, with shells falling on the water all around. It was a ship, all this meaning I was the First Lieutenant, the Earl of Lichfield on the bridge of the Vernon who was lost in sight the German fleet.

The Vernon was a happy ship. The Captain was the well known Henry Luge, friend of Admiral Beatty's, the First Lieutenant was the Earl of Lichfield, whose name was Newcomb

Cover judge for Durham. Whether the Engineer Officer came in one day more or Newcastle came over after the war I recorded a branch at Isaac Huxton and was recorded in the RM correspondence, a Captain. We both had mutual friends "I think we have met before". Later we recalled to find both the Captains of the Service.

In the course of my Service with the Royal Navy I have released my medical or surgical

experience for they were few and far between marine operations of the era and attending to minor illnesses and injuries being the order of the day. As I have said the crew were all healthy young men. However the Royal Navy made a great impression on me. I was not prepared for its efficiency and discipline. Indeed has had a great influence on my subsequent career—I have used this I have studied medicine

HM HOSPITAL SHIP OXFORDSHIRE

Written and who served on HMS OXFORDSHIRE during the two World Wars will be, interested to learn that I took about her service during the two wars written by Harry Marshall, a former member of the Irish Irish Branch who served on her during World War II.

Anyone who may have they might have something to contribute to this book is asked to contact Mr Marshall at the following address.

HELENA COURT
3 HELENA ROAD
MORTLEIGH
KENT TN11 8BB



Fig. 6. Appearances of thick and upper chest showing fit of large mouthpiece in lower chest modification (case no. 2-10), appropriate use of the case



Fig. 7. Lower jaw view of fit of case, and upper chest showing the large clear plastic mouthpiece, cylindrical fibrous and clear to use a glass case (case no. 2-10)

the matter that they were reluctant to mix socially with him though they felt worried that the condition was not 'contagious'.

DISCUSSION

Until his discharge, James received Joseph Mirach from the hands of the chairman in 1945 and found accommodation for him with the help of The Langdon Hospital and public features from an appeal to The Times newspaper¹ the so-called Hospital Miss was established around England and Europe. Eventually society considered the relative desirability that it was preferable to bring against public decency. By the time, Mirach was, diagnosed later a type 1 and had to be kept removed and hidden from public view because of the reaction of society has been severely rewarded.

One case did not become apparent until the day reached winter change and lower chest has even more in the tropical heat. The patient's deformity as a result of the transposition though usually diagnosed with that of Mirach then provoked the concern among the Navy and with living in these premises.

What was initially a personal concern about the 'contaminable' nature of the condition became an ultimate a matter of social acceptance whereby as it was discussed more in this way close community. That the concern was great was rather than just a case system was no longer contained by the fact that there was, except did approach their physical officers and not of a solution could be found. Additionally, it no time did the person become the best of human as a figure of ridicule.

The Royal Naval system of having a group of men under the personal care of an officer has repeatedly proved itself available and did so again in this case. The physical officers sought informed advice from the Medical Department who were usually able to remove the worry regarding the patient's ability of the condition in group discussion with his doctors. That a few of these photographs were still taken by the photographer was not unexpected and this in no way affected the social order which subsequently ensued.

It would seem from the survey that despite better documentation of medical information and greater public awareness of disease which

accretionary prisms, because of its nature as such an advanced form is still capable of producing structures similar to those provided by Dapthn's Mass.

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ATTENTION ALL FORMER PRINCIPALS IN GENERAL PRACTICE

Any, such as Rural Medical Officers who reside in health centres or live part time in a General Practice, must also, if they perform 1000 General practice, be taken as General Practice (RPA 1.1) and as General Practitioner (GPs).

Leptospirosis. Do you consider the diagnosis?

S. V. Rudland

Abstract

Patients with leptospirosis usually present with a fever, muscle aches, and headache, but may also present with a renal, liver, pulmonary, haemolytic, or neurological picture. A young active population is particularly susceptible to leptospirosis.

Leptospires, which belong to the order Spirochaetales, are members of two distinct species. Within each species there are a number of serologically distinct serovars belonging to related serogroups.

L. interrogans and *L. interrogans* sensu stricto are the most commonly isolated organisms in Great Britain. Unfortunately, while both serovars infect humans, both serovars cause different syndromes, but it is required to make one serovars the group has been combined for serological, and in general clinical, purposes, although in future, serovars

belonging to *L. interrogans* serovar *canicola* may be serologically distinct from those of *L. interrogans* serovar *canicola*.

While in leptospirosis caused by one of the serovars belonging to *L. interrogans*, which were named after the animals, i.e. *canicola* and *gripposa*, a case of *L. interrogans* can be detected in culture using pathological serology, and serovars belonging to *L. interrogans* (the *L. interrogans* serovar *canicola*) was detected by use of PCR. Leptospires in Salivarius Dext. Culture Hospital (Pawling) 281 1225 (Tel. 0202 2771 17).

INTRODUCTION

Leptospirosis is a zoonotic disease usually contracted from fresh water contaminated by infected animals. Traditionally thought of as a disease of those engaged in the water and sewage industry, more recently, those engaged in water sports

Recent mild winters have diminished the incidence in the countryside from 1981 when complaints were received by Portsmouth County Council Environmental Health Department in January 1985 a 28 per cent rise, with a comparison to January 1984. This may well be a reflection of a rising visitor population.

Water sports are becoming increasingly popular with both old and new water sportsmen ranging from bathing to canoeing, self saving and windsurfing. An increasing public and professional awareness should be related to an adequate understanding of the persistence and commonness of diseases caused by *Leptospira* spp. In particular Naval Medical Officers dealing with a young active population frequently involved in water sports should be aware of the risk of infection with *Leptospira* spp. during training, may be contracted by patients with symptoms that can be attributed to *Leptospira* spp. This short article describes the causative organism, epidemiology, diagnosis and treatment of *Leptospira*.

CAUSATIVE ORGANISM

Leptospira is a genus which classifies a group of thin, corkscrew-shaped bacteria of the genus *Spirochaeta*, which belongs to the order Spirochaetales. It comprises of two distinct species, the pathogenic *L. interrogans* and the saprophytic *L. biflexans*.

Within each species there are a number of serologically distinct serovars but *L. interrogans* serovar *canicola* is related serogroup *L. interrogans* serovar *gripposa* (including the *L. interrogans* serovar *canicola*). Two types of serovars have been detected. The water sports community

In the case of writing 'Leptospirosis' Rudland was Medical Officer at HMS Challenge.

polysaccharide and is serotype specific: whilst the canine, feline, canine leucophaegeocyte and a group specific. The serotype is more numerous in a point immunogen and is the target for the leucophaegeocyte complement fixation test reaction.¹

EPIDEMIOLOGY

The natural reservoir for *Leptospira* is wild animals, particularly the rodent family. Domestic animals such as dogs and farm livestock can become infected directly with leptospires or through wildlife for their species. For example *L. interrogans* dogs and *L. interrogans* species *hardjo* cattle. Alternatively they may become infected by consumption of water from another host, for example dogs with *L. interrogans* *canicola*. Man is an accidental host.¹

Ikterohaemorrhagiae are the main cause of *L. interrogans* for *Arachnoiditis* sp. the organism being the prime cause of icterus. Weil's disease is *Leptospira*. There was one per cent of all human cases of leptospirosis in 1981 were due to the leptospires *canicola*. In the same year 10 per cent of cases were due to *L. interrogans* *canicola* *hardjo* for which cattle without an important role.¹²

The host animal is usually *canicola* *hardjo* *Leptospira* have been isolated from white blood and bone of *canicola* *hardjo*. *Leptospira* do not usually survive in infection. Their ability to grow and resist pH are limited for the organism, *canicola*.

Leptospira may be present in high numbers, greater than 10¹⁰ organisms per gram of the host renal tissue, leading to excretion of these organisms in the urine to cover, which lead to renal backflow on farms.¹³

Human infection usually results from direct or indirect exposure to this infected animal. *Leptospira* enter through cuts and abrasions of the skin or via mucous membrane linings of the nose, mouth or eyes.¹⁴ Most natural mechanisms for infection *canicola*.

Weil's disease has been reported in a small Indian community which are inadequately covered out.¹⁵ Human to human transmission may occur through breast feeding.¹⁶ *Leptospira*, only confirmed infection has been reported for *canicola* and *hardjo*.¹⁷

The disease shows a well defined seasonal pattern with most indigenous cases occurring from July to December.¹⁸ When recreational aquatic activities are common.

Upper limb and lower extremities are the primary sites for *Leptospira* infection.

remarkable ability to survive in water (Table 1).¹⁹

Table 1 Survival of *Leptospira* in water

Soil exposure	pH 7	4 weeks
Soil exposure	pH 8	2 days
Unfiltered sewage		12-14 hours
Filtered sewage		2-3 days
Sea water		18-20 hours

This ability to remain viable for prolonged periods probably contributed to the recent fatal infection between *Leptospira* and water or sewage workers (Figure 1). However, most past natural infections involved contact with clothing and blood and saliva presence has led to direct cases in this group (Figure 2).



Fig. 1 Human Leptospirosis (Human cases + Human cases 1981)

Over the last few years there has been an increase in reports of leptospirosis amongst these primary water sports participants. These cases have been such as injuries and contact with swimming *Leptospira* cells.²⁰ Therefore, direct contact with water sports such as sailing, who cannot frequent changes may protect with *Leptospira*.²¹

CLINICAL MANIFESTATIONS

The commonest signs and symptoms of

per day) produced a significant improvement in the resistant group when compared to placebo (20%).

The renal biotest should be placed into an aerobic culture system which will support survival of the leptospira. Media for culture should be moist, and for incubation at 37°C and one for incubation at 28°C (very hard to make) in order to grow leptospires. If dark ground microscopy suggests a positive culture the culture should be referred to the Leptospires Reference Laboratory, Harford.²²

The R. K. Hyatt Laboratory recommends that biotests should be culture for viability at the onset of illness and after 34 days. A rapid response antibody test indicates both exposure. The microscopic agglutination test is used to make reference laboratories in vitro, a serological diagnosis of leptospirosis. For field specific dot ELISA procedures are presently awaited, standardization and tests to perform.²³

CONCLUSION

Those staffed with Royal Naval primary health care dealing with a young active population frequently including in water sports may well be faced with cases of Leptospirosis. Tetracycline treatment and intravenous plasma therapy may prevent some complications of Leptospirosis.

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succinylcholine 100 mg. Following intratracheal intubation and ventilation with 100% oxygen an arterial multi-point catheter 5 mg and fentanyl 0.25 mg were given. The patient was subsequently intubated to 18% and ventilation of precapillary and forward zones as suggested. The mean blood pressure dropped to 50 mmHg on intubation after oxygenation but was subsequently maintained at approximately 70 mmHg during the run and a half hour procedure. Several bleeding points were ligated. A coagula patch was included by appropriate laboratory tests.

A total of 15 units of Whole Blood, eight units of fresh frozen plasma, six units of platelets, 30 ml of 10% calcium gluconate, 500 ml of human albumin solution and 1500 ml of reconstituted haem haemofiltrate.

Spontaneous movement on the anterior and vent. A spontaneous reduction of pupillary size 2 mm (both lenses) and bottom of miosis 1 mm 2 mg were administered in percutaneous fashion. Bleeding, measured from very distal venous drains and a further four units of blood and six units of fresh frozen plasma were transfused. There was still no evidence of a haemorrhagic disorder although a typical coagulopathy in the site of percutaneous insertion was suggested.

Twenty one hours after the second intubation a further major haemorrhage occurred and the patient became clinically shocked with a mean blood pressure of approximately 40 mmHg for at least 45 minutes. Three units of blood were rapidly transfused prior to further major operations.

Anaesthesia was reduced with 40 mg of propofol/100 mg and 5 mg of pentothal. Total haemoglobin was 100% oxygen reducing to 80% on arterial gases. Three units of blood, six units of plasma, six units of fresh frozen plasma, 100 ml of 10% calcium and one litre of colloidal were transfused. Mean blood pressure was 47 mmHg immediately after intubation but was thereafter maintained at approximately 45 mmHg.

Subsequent progress was long and complex. Early complications included low periods of oxygen and left ventricular failure. Septicemia was and adult respiratory distress syndrome followed. Paracetamol was reduced from both the system and the wound, and treatment was associated with relevant metabolic, physiological, haematological, clinical, genetic, protein synthesis (DNA) and posture and respiratory pattern. (PAP) 4. Metabolism was not formed on the eighth day. The propofol was

and metabolism were stopped on the tenth day when respiratory function had improved sufficiently to enable the patient to breathe spontaneously but was stopped on other signs of arousal. There was a marked reduction reported to sleep prior to death but rapid reflexes and flaccidity. Neurological examination was otherwise normal and pupilloconstriction was not evident.

It was suspected that the coma was secondary to additive drug administration and an expert policy was adopted. No correction of full biochemical screen was carried out to include metabolic and endocrine studies. This was within normal limits.

There had been no change after a further two days of a metabolic screen as was suggested. This opened an alternative route of investigation. Reported in a likely system. The liver was confirmed by computerized axial tomography (Figure 3) and later biopsy.

After neurological review it was decided that no specific treatment was immediately indicated. The metabolic and biochemical situation was to be monitored weekly while normal limits with moderate dehydration suggested hypotension and hypotension. Hypotension was corrected in the patient was hyperventilating with a PaCO_2 of 4.5 kPa.

Clinical signs of neurological recovery were evident, signs were given approximately and over the following two weeks a full recovery was achieved. Six months later the patient was not normal without major trauma.

DISCUSSION

Drug overdosages could have constituted in the majority of cases as large quantities were administered over a long period. There was a brief period of oxygen which would have resulted in reduced drug clearance, particularly of opiates.¹ However, at day six the patient was hyperventilating spontaneously which suggests that opiate accumulation could not have been sufficient to reach a coma. Metabolism or metabolism metabolism could also be impaired.² Delayed recovery from metabolism has been associated with irreversible effects rather than the fully metabolic and³ so that a time delay may be made, the toxicity difficult. The haemorrhagic and coagulant haemorrhagic was not available.⁴

The various metabolic and endocrine studies

Hypoxic hyperventilation (PHV) and PEEP would have further delayed recovery during the phase of respiratory failure.¹⁰

It is possible that this patient might have suffered extensive damage to the alveoli of a massive pulmonary infarct before the time when the lower limit of autoregulation had been passed, such as delayed hypotension.¹¹ There was no clinical evidence to suggest this possibility.

Endotracheal intubation was achieved during and after the first apnoeic attack. Subsequent apnoea has been shown to result in brief increases in hyperaemia which last longer when PEP is already used.¹²⁻¹⁵ A spontaneous apnoeic reflex was noted which might tend to limit the recovery of PEP resulting from the oral intubation. Therefore the specialist could have intubated and after tracheotomy removed the oral intubation and prevent a reflex inhibition during subsequent hyperventilation. However, the patient was substantially revived after the endotracheal catheter had been removed suggesting that any effect on PEP had been avoided.

Although we cannot prove that the presence of a myocardial infarct alone in this patient is cause, we have postulated why this might be so. It is concluded that delayed recovery from apnoea at the recovery rate just may be the presenting feature of myocardial pathology.

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The College of Ophthalmologists— Old Wine in New Bottles

A. J. Raittal

Chromolaetum is the oldest documented ophthalmologic specialist in medicine and still historical findings point to substantiating this claim. The earliest document called for Hama, northern Crete, concerning the Roman-Latin period 3200 BC, was discovered at the beginning of this century in Suez in Mesopotamia (see page 152). The work gives evidence on the first phenomena of an eye surgery and most certainly the priority for letters which could be the first of book hands. Hama for ophthalmology has obviously a long history. The surgery at that time was limited to incision for cataract and possible cauterizing or possible dilatation of cataract.

A thousand years later the evolution of science (Egypt recorded) the various cases of ophthalmology in the Great Pyramid in 1500 BC describing the treatment of a considerable number of conditions affecting cornea, glaucoma and cataract. Treatment was made by means of surgery and medicine, such as ophthalmic surgery, lens removal. By the time of the decline of the Ptolemaic civilization, the study of ophthalmology had passed from the practical to the theory; more scientific approach of the Greek physicians, around 400 BC, the discussion of natural eye by Aristotle providing a somewhat more scientific basis for treatment.

Galen's success in the study of the anatomy of the eye was made in Alexandria and in Greece dedicated to influence the work of Galen's eye was taken up by Rome in the writings of Celsus. Pliny and Galen down the

14 Century AD are in Rome discussing it reaching the eastern, the treatment of cataract system (see page 152) and the cataract.

Thereafter following the distribution of the Roman Empire by the Barbarians ophthalmology slowly died into the state of ignorance and superstition, and the knowledge acquired with such effort over 3000 years was barely kept alive by the Arabs in the 8th Century. In the 10th years following the 8th Century AD only a few writings have been discovered, the most important of which is in Hama. 10 Years after the beginning of the 14th Century AD the work of these Arabic writers found its way to western Europe in translations from Arabic into Latin and was the basis of the European knowledge in western ophthalmology. Further progress had to wait until the study of anatomy, physiology and in particular optics in the 16th and 17th Centuries provided a scientific basis for cataract and other types of eye disease. It is of official that interest in practice ophthalmology more than both by the College of Physicians and the University of Surgeons a University of modern ophthalmology started about 1700 years between medicine and surgery with ophthalmology as a book to record the state of the eye in practice ophthalmology was also given by the University of Cambridge a tradition which has no further development.

By the end of the 18th century special hospitals for the treatment of eye disease were opening in England the most notable being the London Dispensary, the Eye and Ear of the Eye and Ear which was later to become the Moorfields Eye Hospital.

The spread of eye disease throughout the

eye surgery (see page 152) and the ophthalmology in ophthalmology, a book of the ophthalmology.

gave led to the formation of the Ophthalmic Society of the United Kingdom in 1880 and the world wide publication of the Proceedings of the Society. Spurred by the formation of the National Health Service in 1948, the Faculty of Ophthalmology was formed in 1949 with representation at the Royal College of Surgeons in certain visual standards and education.

This mission remained from 1948 until 1984 when a working party was set up to look into the feasibility of the formation of a College of Ophthalmologists. There were both educational and medico-political reasons for this investigation, the timing centred on the following of the surgical colleges being no longer strictly noted in the recognition of the eye system. Moreover, there were four different Fellowships in ophthalmology at the United Kingdom to serve a common body of around 800 surgeons. After much hard work and following a majority vote in favour from both OMRB and Faculty, a College of Ophthalmologists was formed and granted a Royal Charter in 1988.

The College is governed by a President and Council representing all areas of the United Kingdom and Ireland. Officers and by laws have been established. Standing committees such as the Vapp-Committee have been set up to oversee academic meetings and publications, professional standards, visual standards education, examinations and Statute. A committee has been formed from the ophthalmic organisations and committees set up. The College's own Journal, Eye, has been published from the onset of the Proceedings of the OMRB.

The first examinations for entry to the college will be held this year and will result in awards of Fellowship and Membership, the latter equivalent to the previous Diploma and appropriate for the sub-specialisation grade of Associate Specialist. The inaugural meeting of the College was held in London in April 1988 and attracted an international attendance of over 800 ophthalmologists.

The future of British ophthalmology is now secured and British representation in the new College is being sought to promote British interests.

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REGULATIONS FOR ENTRY TO THE COLLEGE OF OPHTHALMOLOGISTS

Membership of the College

- Candidates must:
1. Hold a medical qualification approved by General Medical Council for purposes of registration.
 2. Have completed eye, visual or Vision Fellow parts in the medical and surgical specialties.
 3. Have completed a trainee course that was training in ophthalmology as a consultant.
 4. Pass the examination for Fellowship and the Theory and Assessment Module.

Fellowship of the College

- Candidates must:
1. Hold a medical qualification approved by General Medical Council for purposes of registration.
 2. Have completed eye, visual or Vision Fellow parts in the medical and surgical specialties.
 3. Have completed a trainee course that was training in ophthalmology.
 4. Pass a period Parts I and II Fellowship course on the Vision Sciences and the Ophthalmic Assessment Module.

Chasing the Bucket: A Nursing view of Continuous Arterio-Venous Haemofiltration/Dialysis

G. E. Workman

Abstract

Haemofiltration has developed to meet the needs of patients at risk just after cardiac arrest. Failure to use proper technique in the management of these critically ill patients, as it is carried out on the bedside by the bedside nurse running staff.

Introduction

Continuous arterial-venous haemofiltration (CAVH) is a therapeutic procedure used in the management of acute renal failure (ARF). It provides a means of filtering the plasma fluid, through a simple arterial-venous circuit (Fig. 1). The technical knowledge that haemodialysis demands is not required making treatment cost comparatively cheap. The costs advantages for peripheral dialysis, such as oligoanuric patients, or nights do not apply to CAVH. The main aims of this treatment are:

1. To remove water from the circulation to prevent or relieve hypervolaemia.
2. To correct acid metabolic imbalances and electrolyte balance.
3. To correct electrolyte losses for the administration of parenteral nutrition.
4. To support the acute renal problems of maintenance.

Acute renal failure is associated with fluid overload and electrolyte disturbances and is a

common problem in critically ill patients as a result of acute renal shut, contributing significantly to mortality. The patients treated with CAVH in RNH suffer all sufficient ARF according to biochemical, haematological, respiratory or metabolic failure. Other causes include septic shock, drug toxicity and disseminated intravascular coagulation (DIC). These patients often require maintenance ventilation and renal support.

METHOD

Vascular access for CAVH requires cannulation of an artery and vein, in the drawing flow the the blood flow through the filter is the gradient between arterial and venous pressure. CAVH provides a continuous, single stream of fluid removed. A high degree of fluid ultrafiltration may be used to provide access for the ultra-compact blood flow. Arterio-venous haemofiltration systems may be used with the incorporation of a parallel pump.

Principle of CAVH

In CAVH two processes are involved: ultrafiltration and reabsorption. Ultrafiltration is achieved with the movement of fluid across a membrane with the aid of pressure arising from the driving force. The positive arterial pressure provides the drive; a negative pressure on the blood side of the haemofilter will pull fluid through the membrane when brought about by the height difference, between the driving renal and the haemofilter. Correction in the

Senior Nursing Officer Workman is currently assigned to the Intensive Care Unit, Royal Free Hospital, London.

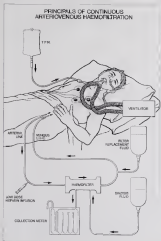


Fig. 1. Principles of CAVH



Fig. 1 Blood flow through the haemodialyser in an E-CPR

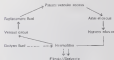


Fig. 2 Blood flow and dialysate flow through the haemodialyser in E-CPR

Monitoring of these parameters involves careful observation.

1. Asepsis, fluid balance.
2. Monitoring, calculating and adjusting flow rates.
3. Recording vital signs especially blood pressure and rate of oxygenation (Q-V_O).
4. Monitoring urea, electrolyte and acid-base balance.
5. Adverse drug therapy to maintain the desired clotting state.
6. Administering pain relief and any drug therapy.
7. Strict maintenance of asepsis even if the catheterized patient is out of the acute resuscitation room especially during his sitting, bed placement and then changing.
8. Care of the limb being used for access ensuring that the distal circulation is not compromised.

9. Avoidance of leaks in the blood line, which would impair flow. Regular checking of all connections to prevent coagulation or air leak or infection.

Potential complications

End of haemodialysis, should a catastrophic error, the patient should be safeguarded by first clamping the catheter and then attending to the haemofiltration system. If a large blood leak has occurred the medical staff should be informed and appropriate fluid replacement commenced. If an air embolism is suspected, the patient should be placed on his/her left side in a head down position and the medical staff informed immediately. Regular monitoring of blood clamping time with replacement of heparin has already been mentioned. However the patient may still be at risk of bleeding from

Measurement of the effects of Lateral Release

A. Quail

Abstract

In a preliminary trial of 27 Lateral release under a laser guide, 54% improved with conservative treatment. Twenty five later in 73 patients with and without surgery, and lateral release. It was found that the clinical examination combined with skyline X Rays gave a good assessment of these patients. The medial angle and the compression angle were easily measured but other observations improved during the lateral release. It seems unlikely however that this is a substitute for improved symptoms especially in the circumstances with frequently observed within X Ray changes.

INTRODUCTION

Acromioclavicular joint pain is a very common complaint at the Artificial Prosthetic and a major cause of medical discharge from the Services. In fact, it is managed by concentrating on accurate diagnosis with careful conservative treatment, reviewing arthroscopy and lateral release for patients whose symptoms fail to respond. The concept of lateral release¹ is widely used in the Royal Navy and has replaced the open approach. Open lateral release is now used only on those cases who have a tight lateral capsule but despite having had a closed procedure. Some Merchant and Moore² proposed the operation should not extend³ have reported the use of laser in the same area part of a combined parallel independent procedure. Bogen and McDevitt⁴ described the benefits of release release in various parallel techniques

finding that symptoms improved in 75% of 103 cases.

In the diagnosis of anterior knee pain the use of X Rays is well published. Gilbert and Pugh⁵ have published⁶ commented on the value of X Rays⁷ of skyline views to verify the degree of acromioclavicular joint pressure tendons to be made.

Merchant's technique⁸ has been described by several authors including Brown and Davies⁹ and Miller, Kohn and Smith¹⁰. These radiographs require early the diagnosis of posterior joint dislocation, a correct parallel relationship between lateral pressure capsule and acromioclavicular joint. It is suggested by Merchant¹¹ in all that event, the diagnosis may be a precursor of the technique.

The so called anterior lateral pressure syndrome could be regarded as a special condition of release procedure in contrast the pressure release in the lateral release. These radiographs of the parallel produced by release view of the anterior lateral capsule should also respond to medial release.

If this is a case, successful lateral release might be expected to produce a significant improvement in parallel relationship between X Rays. An example was therefore made to support the evidence that parallel view was not superior to open technique in a case which probably had anterior type.

Dr. A. Quail, Consultant Orthopaedic Surgeon, is an Honorary Surgeon, the last six years, at the Royal Navy and is now serving as a Consultant Clinician with the Royal Association Army and Air Corps in London.

PATIENTS AND METHODS

In addition with the Royal Navy at Naval Hospitals in the United Kingdom, the Royal Naval Hospital, Gibraltar has a high percentage of

both medial and lateral aspects (commencing with anterior lower part). All patients who possessed both these functions were seen in a separate phase into an eight month period.

The mean duration of symptoms was 36 months. Pain was described as a pinching, burning and dull ache in the heel which was aggravated by using ladders or heavy, repeating, and wet work over rough ground. All patients were fully examined following the methods described by Robinson *et al.*¹ Minimum was particularly good in the Talbot's test, pain on patella compression, articular tenderness and response to bar pain on medial movement of the foot. There were 100 toes in 34 patients seen during the time of the study and of these 12 reported on non-injured non-inflammation symptoms considered with physiotherapy. Out of 34 patients, 17 were males and 17 were females with an age range of 20 to 40 years. There were symptoms in 11 left knees, 14 right knees and by three patients in both knees.

Twenty five knees in 23 patients did not support and required surgery. A full blood count, ESR, and liver, liver and left X-rays including ankles at 90°, 45° and 30° were taken on all these patients. The X-Rays were studied for the signs of excessive lateral patella syndrome as recommended by O'Brien and Parnianpour-Nobari.² At the same time the X-Rays were measured to show the medial knee angle, compression angle and the width of the lateral joint space.

The arthroscopy findings were recorded and a clear lateral meniscus cleared out with a limited knee. Care was taken, especially to divide the medial fibres of the patella tibial ligament and reattach, any the cartilage lacunae as observed by Simpson.³ The compression of the lateral joint was tested by tilting the lateral border of the patella to a constant of 45° although 90° is easily obtained on primary. A mirror dials are mounted on the arthroscopic portal so no attempt had been made to record the superior lateral joint angle result.

All patients were, assessed at six weeks. At this examination the same clinical parameters were looked at and the physical tests repeated with further measurements being taken.

X-RAY MEASUREMENT

The skyline view, each knee in the sitting position, with the foot towards the patella, using a narrow x-ray field by the physicist. The skyline angle was measured by the radiograph

plate as accurately as possible and both knees were X-rayed together.

The medial joint angle is measured as shown in Fig. 1.



Fig. 1

The compression angle measurement was obtained from Dwyer and Bentley⁴ using the technique described by Mowbray *et al.*⁵ The patella is used to be convex when the apex of the condyle ridge is directly over the depth of the femoral notch. As shown in Fig. 2 the compression angle (A/C) is found between the line connecting the lowest point on the patella (B) with the lowest part of the femoral notch (A) and the mid radius angle (A/C). The mid-radius angle is found by drawing the radius angle (B/A/C). If line AD is vertical to AC, it is given a negative value and if lateral a positive value. The average compression angle is described as -6° with a standard deviation of 11°.



Fig. 2

The lateral joint space was simply measured at the midpoint of the femoral head space, 15° after



Fig. 1

RESULTS

Table 1 shows the results of the 12 trials, comparing both before and after surgery. Quadriceps muscle bulk increased with physiotherapy in the two weeks post surgery. Four patients developed an effusion postoperatively, three requiring aspiration. Patient 1 had two punctures in 21 hours prior to surgery, remaining strongly positive in two patients who reported a painful every four and weekly puncture on a further two. The measurement of the Q angle was obtained in eight cases preoperatively and in five cases after three lateral releases. It was also measured in five cases on the arthroscopic side. Tender

ness on palpation of the iliotibial band surface was present in 11 cases post surgery, and only one post surgery. Patellar softening was found in 14 cases before operation and none afterwards. The patella was said to be reduced if there was less than 1 cm gap laterally or medially. Three before the patella on a second examination of the knee was positive and three preoperatively and post surgery on the patellar compression was present in 12 knees before lateral release and in one afterwards.

It was discussed that there was no benefit at all in the full Medial view (20) as per real benefit was present.

Table 2 shows the radiographic findings. The softening of the patellar surface was detected by probing the surface under stress. The surface was soft when a 20 lb weight in the center of a water bath.

Table 3 shows the X Ray findings. The signs of excessive lateral pressure were taken from three radiologists and Ferganesson-Baker.¹⁴ They showed that the changes evident, lateralization of tibial plate, increase in the density of the lateral facet, joint space loss, and medial facet compression. Of 12 knees, 12 showed radiological evidence of excessive lateral pressure, medialization patella, and there was one patient with a separate patella. Patients asymptomatic before this showed radiological evidence of excessive lateral pressure syndrome.

The medial angle was measured as shown in Fig. 2. This was not easy to carry out in all knees due to the presence of the solid knee. The best post release often had to be applied. Medial angles for each side have are shown

Table 1 Clinical Findings

	Pre operation	n=12	Post operation
Quadriceps reduction	5		3
Effusion	0		4 (3 aspirated)
Patella tend	12		2*
Q angle decreased	5		5
Pat softening post	12		1*
Patellar softening	14		0
Medial plate	1		0
Joint line pain	2		0
Pain on extension	9		1*
Pain on compression	12		1*

*group comparison not possible when required post operation.
 *The Q angle measurement decreased if greater than 15 degrees

Table 2 Arthroscopic Findings

Findings	n=25	Medial	Lateral	Total
Softening	0	0	0	0
Fractures	3	3	3	10
Exposure	1	0	0	1
N.A.D.	—	—	—	0
Other lesions				
Medial Plica (impinged)				3
Trans Medial Meniscus				1

Table 3 X-Ray Findings

		n=25		
		Pre-operative		Post-operative
Radiological Signs of Exposure				
Anterior-posterior		23 (100)		Not observed in 6 weeks
Lateral views				
Steep Angle Measurements				
Mean angles	30	11.00	(12.7)	10.07 (17)
at rest	60	10.00	(10.00)	8.04 (20)
Sto to view	90	9.00	(10.50)	9.40 (18)
Congruence Angle				
Numbers out of normal range	30	3 (11)		0
	60	3 (00)		3
	90	2 (08)		3
Mean angles	30	-4.04	(-5.2)	-2.23 (18)
at rest	60	-4.00	(-4.67)	-1.38 (14)
Sto to view	90	-5.00	(-7.0)	-3.40 (16)
Lateral Joint Space				
Mean values	30	6.73	(6.4)	6.6 (8)
at rest	60	5.0	(5.5)	5.6 (7)
	90	4.5	(4.5)	4.5 (8)

|| shows numbers with improved results by post-operatively
figures in () show asymptomatic side values.

Increasingly as two out of three rows the asymptomatic sides showed greater and closer to the normal angles than the sides with symptoms. Fluorography later was introduced as the normal angle of 70% of knees after operation in all skyline views taken.

The congruence angle was measured as shown in Fig. 2. Only small numbers were

foundly abnormal both pre and post operation and the mean angles for each skyline view are shown. Again the asymptomatic side showed less congruence than the symptomatic side although still within 5-6% of all patients who showed changes towards the median and increased congruence after operation.

The lateral joint space measurements as

shown in Fig. 1. It should be noted that patients normally had a relatively normal IQ.

CONCLUSION

The results show that the 100-Hz alpha gate is a good early index of comparison and a screen of lateral types of lateral release but this screen may have underlying pathophysiology. Four patients were slow to release due to a pure posterior release. The measurement of the Q angle was not significantly changed by a lateral release, although it might have been expected to show some reduction.

The anisomeric findings were those expected although the eight cases with release may have been recorded as normal if they had not been probed.

The X-ray findings, however, are more difficult to interpret. There was a high incidence showing the radiological signs of mature, lateral release syndrome but abnormalities on the anisomeric scales were also found. Very few of the anisomeric angles were, strictly abnormal. Some did show lesions causing other lateral release although remaining within the accepted normal range. It appears that lateral anisomeric is consistent with the diagnosis noted on clinical X-rays give a good indication of those patients who may benefit from lateral release. In this study detailed measurement of X-rays does not appear to help in the diagnosis or in the measurement of the results of lateral release. It must be remembered that clinical X-rays are slow representative of a dynamic problem and it appears that, aside to some parallel markings or erythema. The assumption that lateral release may occur at 4500 Hz, a change in the diagnosis of the patients does not appear to be supported. It remains a useful approach to release pressure on the basis of the profile and hence the direction of wear.

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APOLOGY

We extend sampling in the binary model system (EJ & N1) (Piquero-Ramirez 1993) to include a binary flux density threshold and the zero point level in the 'background' level model. A more detailed discussion of background subtraction in Comptonized (C) R X-ray derived spectra, not specifically aimed at the sources up the PL1, is contained in the Appendix Comptonized Spectra (A.1) of Fabbiano.

JOURNALS RECEIVED

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ABSTRACT

[illegible]

Goretex cruciate ligament replacement: Recent experience in the Royal Navy

D. W. Somerville

INTRODUCTION

In 1987 knee problems accounted for 10.8% of all cases of hospitalization from the Royal Navy. Many of these involved high mechanical rupture of one or other cruciate ligament, usually the anterior.

Primary ligament repairs are usually associated with early rehabilitation. Total treatment of cruciate ligament injuries is by secondary rehabilitation as the Physiotherapy Department. This is coupled with advice to modify or stop sporting activities. In patients who fail to respond to conservative management some form of ligament reconstruction may be considered, especially in those under the age of 40.

The cruciate ligaments were described by Galien in the second century AD. The first synthetic cruciate ligament replacement was made in 1945 by Mayo Robson on a 41-year-old woman.¹

In 1947 Roy Grew reported the first joint arthroscopic ligament reconstruction using a strip of the rabbit band. He subsequently reported on a further 15 cases in 1950, only five of which did not show any improvement.²

Since that time many variants of arthroscopic partial, subtotal and repair have been performed.³⁻¹⁰ Extensive arthroscopic operations for ligament reconstruction have been described. For example: (1) The extra-articular Allarth procedure;¹¹ (2) The Jones operation using patellar tendon and patella;¹² (3) Free patellar tendon graft;¹³ (4) The use of allogeneic tendons.¹⁴

In the past decade several different synthetic materials and composites have been used to reconstruct damaged ligaments. The joint being a contact mechanism and often associated mechanical use. This induces wear off mark and other physical alterations and distalitis related use (Bly).

Goretex composite is different to the other joint material. Artificial ligaments are constructed by braiding together many strands of the material.

Between March 1984 and January 1986, forty six Goretex cruciate ligament reconstruction were performed in RNM Medical. These patients have been assessed retrospectively to check the early results and the effectiveness of the procedure in restoring patients to normal activities.

PATIENTS AND METHODS

Forty six knees were operated upon in forty six patients. Table 1 shows sex, age range and side of ligament reconstruction.

Table 1

Total No. of patients	46
Sex	44 Male (3 a repair) 2 Female (2 revised)
Race	21 White 22 Negro
Age	40 Maximum 8 Minimum
Age range	18-45 (average 28 years)

Superior Orthopaedic Services with a Service Specialist in Orthopaedics, Superior and successfully recruited to a medical hospital in Glasgow.

Most injuries were sustained during sporting activities but 15 patients were unable to identify any specific incident and attributed their knee problems to multiple lesser injuries.

The time from injury to presentation to the Orthopaedic Department was extremely variable, from immediately post injury to approximately 20 years. The average length of time from injury to leg/foot replacement was 22 months (including the patients who took 20 years to present).

At presentation to the Orthopaedic Department all patients complained of pain, some describing, which in the Service Personnel was threatening their career within the Armed Forces. All patients who remained had generally unstable limbs, in addition to anterior cruciate ligament, and PCL tears (20/41). Most had subsequent prolonged periods of rehabilitation and 21 patients (51%) had undergone one or more surgical procedures (Table 2).

Table 2 Previous surgical procedures

Primary anterior cruciate ligament repair	3
Medial collateral ligament repair	3
Medial meniscectomy	6
Lateral meniscectomy	7
Partialectomy	3
Flap procedures	8
Prosthetic	6
Joint procedures	1

Following post-trauma assessment, all patients were assigned for arthroscopy and examination under anaesthesia. Other procedures noted in arthroscopy were meniscectomy in 10 patients and meniscobandage defects in six and knee locks in one. Flaps were removed and/or more were made for subsequent releases and routine ligament reconstruction.

OPERATION

Methods for arthroscopic treatment of isolated ligaments are described.¹ In the cases where operation was employed throughout. For most are routine ligaments, lengths of 18 cm in length was used in most patients; 10 or 11 cm lengths were required for posterior cruciate replacement. The ligament was sectioned to leave a hook made using wires. Drivings were taken down a short day during which saw the patient and performed under quadriceps coverage. Early in the series patients were placed in plaster casts for three weeks but later this was

discontinued. In later cases a plaster knee immobiliser was used only to good effect. Early mobilisation was started and late, bend had been achieved the patients were mobilised on crutches and were on their own feet by the evening. In standard physiotherapy on all the limbs in an open knee position.

RESULTS

Fourteen patients have had no problems what survive from the total of replacement of all initial sport injury.

Post-operative problems are shown in Table 3.

Table 3 Post-operative problems

Grafts removed	8
Traumatic release	1
Extensor lag	6
Posteriorly poor quadriceps	4
Extensor short	4
Pain at total knee site	8
Tibial nerve desensitization	2
Knee fracture	1
Infection/osteomyelitis problems	2
Arthralgia/bleeding	3
Posterior instability	4

No grafts have been removed (Table 4). Wearing of the soft support taken from tissue the implants show a large body graft will react but at risk, one patient was there histological evidence of infection. In this case histology of the graft was given from the graft. All grafts were removed less than two years after operation (Range, 3-21 months, average 18.6).

Release was not on all patients but worked rapidly in most. Released in eight patients, none with large effusions occurred. Under this, were very low rates with not reported and the patient was simply advised to reduce their activities gradually with good effect. Three of these patients have had their grafts removed.

Extensor lag was associated with poor quadriceps control. Full extension eventually was achieved in all but one case in which it was felt that the ligament was too tight. The whole procedure was abandoned and full extension gained. Unfortunately, a wound was developed and the ligament has been removed.

Extensor short, which occurred in the final thirty degrees of extension was seen in four

Table 4 Inplants removed 6 cases

- 1 Free-to-grow tumours which resulted in implant infection. Implant removed, grafted from graft
- 2 Skin-to-skin wound was grafted (MMSA). Graft culture negative
- 3 Skin-to-skin wound was infected. Graft culture negative
- 4 Recurrent effusions, pain over lower sternum. Graft culture negative
- 5 Recurrent effusions, multiple abscesses with fungal sepsis, growth on oral examination. Graft culture negative
- 6 Recurrent effusions, multiple abscesses. Graft culture negative

patients and probably under a replacement in the future with Neostigmine as the usual operation could well prevent this.

Prostheses of the chest were because of problems not arose past an Leveling. Lowering of the sternum has occurred in two cases and re-formation in one. All were replaced or replaced.

One patient developed a tumour under the upper wound. This subsequently became infected and the tumour has been removed.

One patient developed haemorrhage around and the infected skin grafting.

Four patients had persistent, unstable, de novo operations.

Outcomes following graft removal (Table 5)

A total of six grafts have been removed in this series (Table 4). Three were removed because of recurrent effusions which were eventually it seemed to be infected despite negative bacterial cultures. No positive cultures with other obtained from these cases.

All patients, but one, now wear a latex substitution brace. The patient without a brace has had a further substitution procedure.

Four other Sarcomas have been removed, but only one (irradiated).

Outcome in Sarcomata (Table 6)

In this series 40 Sarcomata were operated upon of whom 32 Sarcomata returned to Category P2 and it is expected that four more will also reach the Category P2 of the 33 who were operated on and designated for a further period before returning to P2 and another has been designated and possibly will have to be Sarcomata. In two of the group the implants have been removed but P2 Category

Table 5 Outcome following implant removal

(a) Two patients	Recurrent effusions
(b) One Sarcomata	Recurrent and localized infection
(c) Three Sarcomata	One in Category P2/3 when removed only leaving a brace
	One P2 following a Jones procedure
	One in Category P2 leaving a brace for graft but without a further substitution procedure

removed and wearing a brace Sarcomata and the other having undergone a brace repair (Table 5).

The remaining six of 42 have been brought under a Board of Surgery (Table 7). Three had persistent, unstable, de novo, operations and were irradiated. Two had return of instability following graft removal—one has been irradiated but the other has been irradiated. P1/2 wearing a brace. The remaining patient was Sarcomata because of other disabilities sustained in a road accident. The brace was made and replacement at the time of discharge. These four patients were irradiated (1/1 P2).

Table 6 Outcome in Sarcomata

Total	42
Returned to Med Cat P2	32
Expected to return Med Cat P2	4
Board of Surgery	6
Irradiated	5 (1/1 P2)

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ANNOUNCEMENTS

GENERAL PRACTITIONER WRITERS ASSOCIATION

The Association is an international organization serving the general practitioner writers in territories outside the United States, and to those who write articles and columns in print. It was first formed in 1955, and has since then grown to include more than 100 members in 17 different countries and continents from all parts of the world, with 1500 "World Correspondents" in 1000 "Magazines" and 1000 "Journals" in the world. The association publishes its own Journal, the "G.P. Writer," and its 12000+ in territories groups in several countries. Two working days are held each year, which are a meeting and a day of all letters to the editor, which is a report of all members, including letters of their working experience and advice, in turn for all medical journals in Britain and other countries.

Meetings are held in the United States, and are a very important part of the association. For the details, see the details below.

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International General Practitioner
The Editors
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THE NAVAL MEDICAL COMPASSIONATE FUND—ROWLANDS LEGACY

The Naval Medical, Longshoremen's Fund has been established in 1955 and is the largest of its kind in the world. It was established in 1955 and is the largest of its kind in the world. It was established in 1955 and is the largest of its kind in the world.

The fund was established by the Longshoremen's Fund, which was established in 1955 and is the largest of its kind in the world. It was established in 1955 and is the largest of its kind in the world. It was established in 1955 and is the largest of its kind in the world.

During the 1955-56 year, the fund has received 1000 donations of 1000 each, and has received 1000 donations of 1000 each, and has received 1000 donations of 1000 each.

Rehabilitation of Injured Royal Marine Recruits

D I Reddell

INTRODUCTION

COMBATANT TRAINING, by its very definition, is bound to cause injuries to some of those who volunteer to undertake it. To meet this, the Command Centre, Royal Marines, has developed a highly trained rehabilitation system where men have more or full limits. In the process that would involve taking a man from total disability up to a level of fitness to undertake his Command tasks.

To achieve this aim the Principal Medical Officer is assisted by physiotherapists and medical personnel and instructors. The medical medical system is organized into three sections:

1. inspection of light dress only
2. see lower limb physical
3. full rehabilitation

Once the patient is able to run up in three minutes at running speed in loose order without discomfort for a three period into the physical training programme to achieve the required level of fitness to return to training at this stage at which he left it.

The diagnostic group which will tell the available manpower post-front which is correct in the system managed the nature of injury and the type of support required and the type of training to which these men are. The future is particularly relevant to medical officers have been made for training to return to normal to return to the military and medical services.

As training begins. These changes are therefore training of the men's mind.

PATIENTS AND METHODS

The Principal Medical Officer, with all systems before, they are allowed to be considered to be to return to normal physical training. This point is a minimum, where the man is able to run three miles at training speed without carry any one response. Between September 1982 and August 1983 records of all men who returned they were maintained.

Records of those men who did not reach the standard are not as yet available as many left up their option to leave the Royal Marines when are discharged for other reasons such as lack of motivation and some are medically discharged. At this time it is impossible to specify those who have failed in their return to normal. The next stage of the investigation should physically try to include those failures. At this stage an attempt is made to establish the cause required to make it various injury rates, such as in the medical medical hospital.

RESULTS

During the study 101 men were successfully returned to training. This represents 17% of all recruits who joined CTRM during the study period. Table 1 shows the frequency of injury in relation during the first and last 12 weeks of the 16 week training cycle. It should be noted that 10% of problems occurred in the lower limbs and over half of men were injured due to injury or overexertion.

Lower limb and ankle problems are more common injury, which occur about 10% of the

Supernumerary Reddell is the principal officer of the Command Centre, Royal Marines, at Lympstone.

Table 1 Categories of successful rehabilitation from 1985/86

	1-15	16-30	Total
Foot	46	54	100
Ankle	32	68	100
Shin	41	130	171
Knee	44	84	128
Other	7	23	30
Total L.I.	170	359	529 (78%)
Other injury	43	48	91
Total injury	213	407	610 (93%)
Infection	10	27	37
Wound/healed	10	10	20
Total	241	444	685

help everyone and the physical therapist is more active. Upper body support is most frequent early on, leaving when there is no area of weakness and much time is spent in the gym leaving the technique of rope climbing.

Table 2 looks at time spent on more direct, in case for some that the headmaster required an increase of just five days less two weeks for full recovery can be required on the few occasions it

took more time of training. The majority of men, leaving could expect to return in January/February 1986 after an average of continuous leave time and took six weeks to heal. A further 11 men left the Service at the same time after fulfilling their injury. Heat and foot problems although small in numbers took about eight weeks to heal. They stayed there to visit training in underground bus projects in June. Backache, calf pains, muscular strain frustrated with the more problems in this category and took just under 10 weeks to heal. Straining left wrist of rehabilitation officer. Reopening of a wound would require a 50% success rate with these injuries.

Table 3 examines ankle problems as more direct, foot, two more the great majority, with lateral ligament strains, recovered in just over six weeks on average. There is a common injury on the return to a lot of more time to heal over rough terrain at night. Although with fracture and dislocation are relatively infrequent, they take over four months to recover. Achilles tendons, especially, as a muscle in the Army. With only 21 cases requiring rehabilitation in three years and with a very high rate of recovery on five weeks, there does not seem to be cause for great concern in the Marine.

In Table 4 it is apparent that only two out

Table 2 Average times (days) spent in remedial with foot problems

	Number	Average time	SD	Total time
Toe	5	44.2	21.0	221
Heel	11	39.4	26.8	433
Calf injury	15	44.7	20.1	670
Heel/foot	13	58.2	47.6	756
Other areas of concern	52	67.1	27.6	3490
Total	100	67.6	30.4	6740

Table 3 Average times (days) spent in remedial with ankle problems

	Number	Average time	SD	Total time
Lateral ligaments	82	45.1	23.6	3700
Fracture/dislocation	15	119.4	66.2	1790
Achilles tendons	33	36.8	19.2	1215
Total	130	60.2	40.8	6705

problems returned to training. These were all injuries or occupational syndromes, a variety incompatible with life as a Royal Marine. Six men in a diagnosis in the past or perhaps syndromes. It is very common and often disabling, but has no average course, lasted even seven weeks. Only slightly more disabling at just over nine weeks are undoubtedly proving that some Fractures (Bonyard, 199) to an army even a serious rate of 81%, but started into 102 weeks of rehabilitation. Traumatic Head Injuries all faced a death or permanent injury, with 18 months or more. In all establishments of the then old and still exist about 1000 men.

The largest problem was the knee, illustrated in Table 3, was selected knee pain. Out of 21 men succeeded in returning to training, most, due to a lack of success in training, the condition that is, any reason of it. On average they fought, a few more weeks to return from, if they could. In the past, the problem was a relatively frequent event towards the end of training, are caused by, English League soccer and American football players. These often have a little pain of the knee which is sufficient to cause alteration in the mechanics of the joint leading to a secondary infection. Later pain. The following 21 knee problems were, mostly caused, at least, they were according to report to training after a momentary, although only one of three played out as a Royal Marine.

The remaining team had problems, as the personnel and hope to collection of the knee pain, caused in the above factors and areas and with various problems. These were, so unfortunately, prove most of limited time course.

The 102 cases of lower limb injury took an average of just over eight weeks to return and accounted for 4363 weeks of lost training time, while in the medical treatment system.

Table 3 shows the other figures. Only 21 knee problems returned to training after a long treatment of nine weeks. The knee probably reflect the poor success of treatment rather than the true incidence of injury. Of course, instances of ligament tears or sprains or dislocations of shoulders required well to treatment, although apparently important, do not usually cause a system that is not concerned to lower limb problems. Ninety 37 were injured to lower after eight weeks.

In Table 4 the knee problems are examined. The reasons of recovery time is well illustrated by the large standard deviation (SD). There, men range from a couple of weeks off following, to a man who was off for 1 year with an acute joint infection. Treatment after infection is important and the usual sight of it diagnoses a large number of excellent young men who have left after being in service from infection. The non-infection column includes

Table 4: Average return played again as corrected with knee problems

	Number	Average time	SD	Total time
Off	8	41.5	18.5	348
After pain	81	53.5	32.4	3081
Total figures	89	55.0	30.5	3429
Total return	100	65.7	37.5	6566
Total	171	65.1	47.3	11133

Table 5: Average return played again as corrected with knee problems

	Number	Average time	SD	Total time
AKP	81	52.4	28.4	4241
PPB	28	42.8	18.1	1198
Other knee	21	55.2	32.9	1173
Total	130	52.5	35.6	6612

Table 6. Average (H/4) (knots) spent in remedial work after lower limb problems.

	Number	Average time	SD	Total time
Trough/leg problem	18	41.2	31.1	740
Other	12	38.2	38.5	458
Total	30	40.2	34.2	1198

Table 7. Average times (knots) spent in remedial work other injuries.

	Number	Average time	SD	Total time
Back	54	62.9	42.9	3382
Upper body/limb problem	17	58.9	48.1	1002
Total	69	60.9	48.4	4384

Table 8. Average times (knots) spent in remedial work problems other than injury.

	Number	Average time	SD	Total time
Intermen	45	68.4	62.5	3121
Others	33	64.9	29.9	2121
Total	66	67.9	55.2	4442

asthma, hernia, varicose veins, otitis media and pulmonary emphysema; all of which require special attention to regain fitness.

Overall these 451 men spent an average of just over eight weeks in the medical remedial course, a total of 3723 weeks or 136 years.

Fig. 1 shows the work of training completed in the case of medical backpayers for the periods 1945/54, 1954/67 and 1971/81. Each period was from September to August. Two hundred and thirty three recruits were back-payed in 1945/54, 199 in 1954/67 and 129 in 1971/81. In the first period these men began after weeks 7 and 21 in the emergency work 4 and in the third after week 11. What Fig. 2 shows is that in the first period 54.9% of total back-payers in 1945/54 to 54.4% in 1954/67 and finally to 47.9% in 1971/81. Week 28 shows very similar figures for the three periods (31.9% (47.9% and 31.9%).

DISCUSSION

Over the past few years, it has become more apparent that one of the Britain's most valuable resources is its manpower. The remedial system at CTRM has evolved to conserve this resource, and it is probably the most effective, organized in the Service in achieving this aim. The 451 men reported on represent over 20% of the recruits who joined the Corps between the early 40s. Seventy-eight per cent of the medical specialties of rehabilitation followed problems with lower limbs and 90% followed injury or disease.

Table 1 illustrates the large number of lower limb injuries (LLI) suffered in the first half of training when fighting order and weapon work may cost 30 pounds or more for virtually all recruits.

Foot problems (Table 2) are dominated by some features of the recruitments all of which

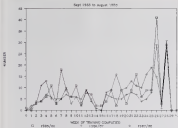


Fig. 1. Medical bird releases.

were confined independently by X ray. There is no injury that should always lead to our estimate rate of only 55% a disappointing. Progressive atrophy such as the persistence of burning scars and vesicles and the spreading of the girth floor will be discussed in a future paper but the major factor in our failure was that the bulk of these injuries occurred on the first two weeks of nursing when a set back of the mother was perhaps more damaging to a chick's morale and commitment than causing loss of mother care.

The majority of adult problems (Table 4) were serious, of the medical importance towards the need of feeding. The emergency team to return to nursing was a week a remarkable achievement when they were severe enough to remove a chick from nursing. Most were caused by nursing rough breasted others at night. The small number of fractures and dislocations took long periods to heal (over 17 weeks) but the phenomenon of caring for the individual would prevent us from approaching these injuries in any other way.

Tired spent fractures also confined such

periodically by X ray and then pain also is carried most consistently on the second half of nursing when physical stress was greatest. The large number of nursing on nursing (Table 4) explains the necessity of treatment. Within the case of severe fractures, then suffering those injuries late in nursing are largely concentrated in the Corps and are also seen. Most in the familiar with and have back on the "System."

Only 128 were reported to nursing (Table 4) following lower problems and this indicates that the failure of conservative treatment of the very numerous cases of complaints. This action does not feel that there is any question for more surgical interventions which at the very least a few required was uniformly disastrous but the better working and no apparent research effort into the causes of the problems. Used this failure will undoubtedly cause the loss of many more for young ones.

Our further lack of success in feeding birds (Table 7) and post nursing problems (Table 8) again shows medical inability in the treatment of common and debilitating complaints. We can perhaps take other medical birds into

apparent growth towards both upper body problems (Table 7).

This work is still being completed at the time of back sampling shows where the pressure points in the system lay. There have been three distinct different systems during the period of the study and back-sampling needs to occur prior to or during major changes. It is interesting to note the reduction in back-sampling at work 26 which has been due to the change of the location to visit the stores at that time. In 1982/83 work 26 was the collection of a pre-ordered period of routine physical and mental pressure with the final seven night watches starting in the end of 8. Almost 17% of medical back-samplings occurred on that work. By 1983/84 it had been possible due to the removal of a working constraint to spread the physical pressure of work 26 over work 27 also. The percentage of back-samplings fell to 14.4%. By 1984/85 a less obvious work of Resource and Human Train-

ing was in work 25 and this too eventually was produced a fall to 5.1% of all medical back-samplings. The Commanders are on a 24 hr on-board and this is confirmed by the number of the hours over the three periods under investigation (11.4%, 14.1% and 17.4%).

Throughout the period of investigation it must be remembered the great influence of morale and motivation. Many crews are quite happy with their 'traditional' shifts in that they return on top of the affected area. Individuals may not understand it or not to the crew's normal welfare and not long then the best efforts of the medical staff will fail.

Finally, a greater understanding of our job was may enable greater communication of to seniors, senior staff, who will monitor and is enabled to identify our future need to train. Clearly there is an urgent need for more education on medical systems throughout the Service.

LETTER TO THE EDITOR

Dear Sir

While it may already be fairly well known I wish to inform my associated reader of the forthcoming Royal Naval Medical Service Symposium on the Human Aspects of Medicine in May 1985. This symposium is being organized jointly by RNM Hospital at Plymouth and comprises the MCMC at Medical College and three papers and three medical branch meetings and our English/RNMCs are based at the hospital and run over 4 days. This was organized by the Joint English/RNMC and Organized by 1984 by means of the research on the human aspects of medicine in the medical service of a large number of individuals working in the field, including a support for the service.

Would this symposium give a complete as hoped to Royal Naval Medical Service at the time. As the Royal Navy is to be involved in the future, working the symposiuming in 1985 in the field of the future, some more research is being in the field of the future. The Royal Navy is to be involved in the future, working the symposiuming in 1985 in the field of the future.

Yours faithfully
LESLIE P. FREEMAN
CPOMA, Royal London
Epithelial Membrane Division

SERVICE NEWS

ROYAL NAVAL MEDICAL AND DENTAL OFFICERS

NO VACANCIES

The Parker Maxwell Prize for 1932

has been won by

Surgeon Captain J. M. Bailey

for his papers on the effects of cerebral infarction on the lungs

APPOINTMENTS AND PROMOTIONS

To Surgeon Lieutenant Commander

S. J. D. Pl. of A. J. Rogers

F. L. Gaudin, R. A. G. G. G.

G. F. G. Gaudin, R. A. G. G. G.

A. S. Rogers, R. P. Rogers

F. J. Moore, R. C. G. G. G. G. G. G. G.

G. G. G. G. G. G. G.

To Surgeon Lieutenant

A. B. Bailey, J. M. Bailey

A. B. Bailey, J. M. Bailey

A. Bailey, S. P. Gaudin, R. M. Bailey

G. A. Bailey, C. B. Bailey, D. C. Bailey

S. B. Bailey, S. J. Bailey, J. W. B. Bailey

To Acting Surgeon Lieutenant

M. C. Gaudin, D. J. Gaudin

S. J. Gaudin, F. A. Gaudin

S. A. Gaudin, F. J. Gaudin

Periodical Publications for Practitioners include 12
Quartals 1932

To Surgeon Captain

A. M. Gaudin, A. P. Gaudin, G. G. G.

To Surgeon Lieutenant

A. B. Bailey, J. M. Bailey

A. B. Bailey, J. M. Bailey

To Surgeon Commander (DS)

D. H. Gaudin

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SPRITING OFFICERS

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General and Medical

Surgeon Commanders F. J. Gaudin, D. J.

General Medicine

Surgeon Commanders R. P. Gaudin, D. J.

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Surgeon Lieutenant Commander R. L. Gaudin

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Surgeon Lieutenant Commander D. J. Gaudin, D. J. Gaudin

R. Gaudin

Surgeon Lieutenant Commander R. P. Gaudin

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Supervising Engineer, Planning Office / B. A. Goudarzi, OBE
Supervising Engineer, Planning Office / B. A. Goudarzi, OBE
Supervising Engineer, Planning Office / B. A. Goudarzi, OBE

AUTHOR INDEX

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the 1990s, the number of people in the UK who are aged 65 and over has increased by 1.5 million, and the number of people aged 75 and over has increased by 1.2 million (Office for National Statistics 2000). The number of people aged 85 and over has increased by 0.5 million.

There is a growing awareness of the need to develop services to meet the needs of the ageing population. The Department of Health (1999) has published a strategy for ageing, which sets out the government's commitment to improve the lives of older people. The strategy is based on three main principles: (1) to ensure that older people have the opportunity to live independently; (2) to ensure that older people have access to the services they need; and (3) to ensure that older people are treated with respect and dignity.

The strategy is based on the following assumptions: (1) that older people are a valuable resource; (2) that older people have the right to live independently; (3) that older people have the right to access the services they need; and (4) that older people should be treated with respect and dignity. The strategy is based on the following principles: (1) to ensure that older people have the opportunity to live independently; (2) to ensure that older people have access to the services they need; and (3) to ensure that older people are treated with respect and dignity.

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